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The Province of Alberta

IN THE MATTER OF "THE NATURAL
GAS UTILITIES ACT"

—and—

IN THE MATTER OF an Enquiry into
Scheme to be adopted for Gathering,
Processing and Transmission of
Natural Gas in Turner Valley

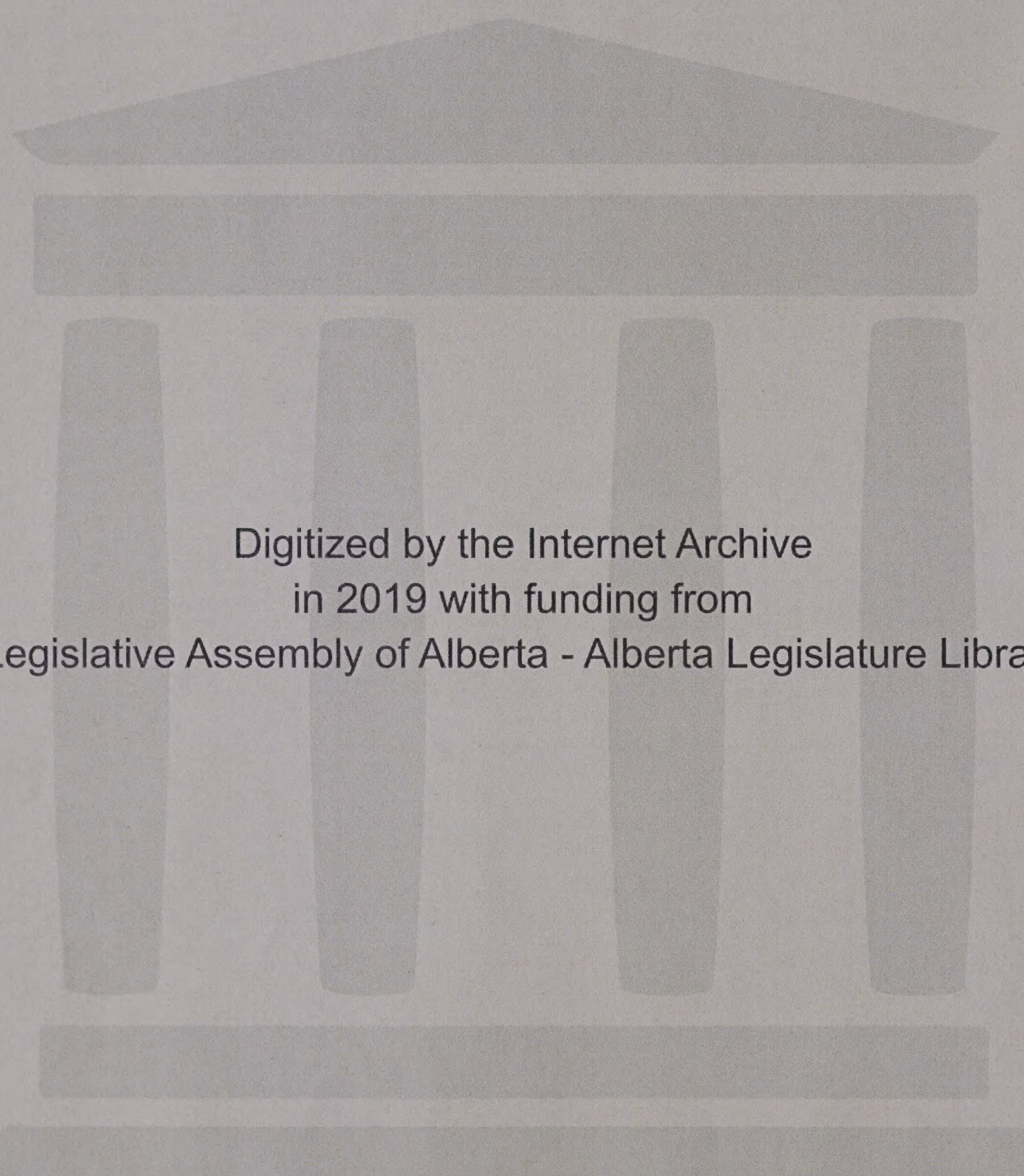
G. M. BLACKSTOCK, Esq., K.C., *Chairman*

Dr. E. H. BOOMER, F.C.I.C., *Commissioner*

Session:

CALGARY, Alberta April 18th, 1945.

VOLUME 25.



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I N D E X

Volume 25

April 18th, 1945.

WITNESSES

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Corrections..... 1935

H. Le M. Stevens-Guille (Continued)

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Corrections

- 1935 -

April 18th, 1945.
9.30 A.M. Session

MEMORANDUM OF CORRECTIONS OF TRANSCRIPT
VOLUME 11 - Pages 781 to 872
EVIDENCE OF RALPH E. DAVIS

<u>PAGE</u>	<u>LINE</u>	<u>CORRECTION</u>
786	29	"Bottom-hole-pressure" should read "top-hole pressure."
788	23	"Volemetric" should read "volumetric".
791	7	"1934" should read "1924".
"	9	"Baker" should read "Bacon".
"	10	"Baker" should read "Bacon".
809	23	"Chart" should read "Charts".
816	13	"5.076" should read "5.067".
848	31	"90,000" should read "90".
852	21	"Munroe" should read "Monroe".
"	30	"300,000" should read "300".
853	3	"Munroe" should read "Monroe".
"	6	"Plant" should read "plants".
854	7	"Munroe" should read "Monroe".
"	9	"Bascok" should read "Bastrop".
"	10	"Alexandre" should read "Alexandria".

1. The first part of the document is a list of names and titles, including "The Hon. Mr. Justice" and "The Hon. Mr. Justice".

THE UNIVERSITY OF CHICAGO

1944

1990

- 1936 -

MEMORANDUM OF CORRECTION OF TRANSCRIPT
VOLUME 12 - Pages 876 to 947
EVIDENCE OF RALPH E. DAVIS

<u>PAGE</u>	<u>LINE</u>	<u>CORRECTION</u>
887	14	"Pressure" should read "present".
890	3	"Billion" should read "million".
"	26	"24,900,000" should read "24,900,000 Mcf."
891	7	"Madison" should read "British American".
"	8	"Present" should read "Madison".
896	27	"Mayland" should read "Maryland".
"	,28	"Maryland" should read "Mayland".
"	29	"Mayland" should read "Maryland".
930	2-3	"One-third" should read "one-thirtieth".
930	23	"206" should read "260".
934	14	"Pressure" should read "gas".
943	19	"Four or five million" should read "four or five hundred million".

Corrections

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MEMORANDUM OF CORRECTIONS OF TRANSCRIPT

Volume 13 - Pages 1041 to 1052

EVIDENCE OF RALPH E. DAVIS

<u>PAGE</u>	<u>LINE</u>	<u>CORRECTION</u>
1049	20	Answer should read: "The reserves of this field have not been used since storage started. They are available for peak load requirements but it has not been necessary to use them."

100-100000

THE UNITED STATES OF AMERICA

DEPARTMENT OF JUSTICE

OFFICE OF THE ATTORNEY GENERAL

WASHINGTON, D. C.

100-100000

TO THE HONORABLE SENATE OF THE UNITED STATES

IN SENATE, FEBRUARY 1, 1900

REPORT OF THE ATTORNEY GENERAL

ON THE PROCEEDINGS OF THE

COMMISSIONERS OF THE

Corrections.

- 1938 -

MEMORANDUM OF CORRECTIONS OF TRANSCRIPT
Volume 17 - Pages 1334 to 1364

EVIDENCE OF F. AUSTIN BROWNIE

<u>PAGE</u>	<u>LINE</u>	<u>CORRECTION</u>
1334	10	"Frank W. Brownie" should be "F. Austin Brownie"
1335	23	Delete the word "similar".
1336	14	"billion" should be "million".
1337	last line	"increases this" should be "increased its".
1338	3	"end" should be "ending".
1338	11	"of the 1944 sales at the end of the year and" should be "using estimated 1944 sales".
1338	13	A period should be inserted after "1944", and a capital "T" to start the new sentence.
1338	16	Replace the words "and show" with a dash.
1338	17	After the word "add" insert "to".
1338	18	Delete the word "for".
1338	19	"during" should read "between". "1945" should read "1948".
1338	20	After the word "sales" insert "per customer".
1338	26	This sentence should read "starting in 1941 this trend was suddenly reversed until in 1944 it was 215 M.C.F. per annum".
1339	1	After "factors" the rest of the sentence should be "such as the rate reductions which have occurred, the overcrowding due to the war and the general prosperity of the community resulting in less careful control of gas consumption."
1339	4 to 13	Starting with "it is not" and ending with "post-war figures" these lines should read - "It is not anticipated, therefore, that the sales will revert in post-war years to where they would have been if the prewar downward trend had continued, or even to the 1939 figures. The arbitrary assumption is made that, of the 26 Mcf per annum increase since 1939, 15 Mcf per annum will be wiped out by 1948 due to a lessening of the overcrowding, to more careful gas usage, and to improvement in the efficiency of appliances. This amount, therefore, of 15 Mcf for the present 24,000 odd customers, has been deducted from 1944 sales to arrive at the postwar figure.

Corrections

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<u>PAGE</u>	<u>LINE</u>	<u>CORRECTIONS</u>
1339	16	"the expected" should be "excluding".
1339	25	"industries" should be "industrial".
1339	29	"1,218,000" should be "1,288,000".
1340	5	"1944" should be "1945".
1340	7	"very much" should be "partially".
1340	10	"on the basis of" should be "of just over".
1340	15	"the" should be "to" and delete the word "of".
1340	29	"seven" should be "southern".
1342	7	Delete the word "two".
1343	8	Delete the word "not".
1343	last line	"early" should be "latter".
1357	12	"had" should be "have". "that was" should be "to these".
1359	1	"loaded" should be "load".
1361	16	"8.978 million Mcf's" should be "89.78 million cu. ft."
1361	17	"8.506 million Mcf's" should be "85.06 million cu.ft."

- 1940 -

9.30 A.M.Session.
April 18th, 1945.

MR. STEER: If the Court pleases perhaps this would be an opportune time to mention that I find that I have got to be in Ottawa for three weeks and I am simply making that statement and requesting that if possible the Board deal with in the week of May 7th the market sharing position that is put forward and some similar matters in which perhaps my client is less likely interested than in say the evidence of valuation of property.

THE CHAIRMAN: That can be arranged so far as the Board is concerned, Mr. Steer.

MR. STEER: Thank you, sir.

THE CHAIRMAN: It was arranged that your witnesses would be here on the 7th of May, Mr. Harvie?

MR. HARVIE: Well, either that, on the 7th of May or the 14th. I am going ahead with the market sharing position first, Mr. Chairman.

THE CHAIRMAN: Just let us see what we have now. Mr. Stevens-Guille is dealing with M-8 and that, I presume, will be followed by M-9.

MR. CHAMBERS: Sir, we will not deal with M-9, that has more to do with operating. My idea was when we finished with M-7 and 8 that we have dealt more or less with the capital position and my understanding was that we were going to deal with the B.A.'s rate base, and then M-9, which is the operating costs, later on.

THE CHAIRMAN: Yes. Well would it be satisfactory to you, Mr. Chambers, if in the week of the 7th of May we go on with the market sharing position?

MR. CHAMBERS: Yes, that will be quite satisfactory,

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and I think Mr. McDonald is interested in that, and I do not know that the Gas Company is particularly interested in that.

MR. STEER: No.

MR. HARVIE: I will discuss it during recess and make certain with regard to it. It might be that we would be able to go on on the 7th of May.

THE CHAIRMAN: In the meantime, tentatively, subject to what Mr. Harvie may decide, and if we are finished with Mr. Stevens-Guille today, then we will go to the market sharing position on the 7th, and then Mr. McDonald, if we finish with that and Mr. Harvie does not wish to go on, could you take up your competitive fuels?

MR. McDONALD: I will be ready, except the possibility that the Gas Company would be very much interested in that.

THE CHAIRMAN: Yes. The question of competitive fuels has been passed up.

MR. STEER: That is a matter in which I would have an interest, sir.

MR. CHAMBERS: I would be inclined to think that we will not finish with Mr. Stevens-Guille this morning. I may take an hour or an hour and a half with him, and it does seem to me that the week of the 7th of May would be taken up in completing his evidence and the sharing position, because the sharing position is quite involved.

THE CHAIRMAN: Assuming it does, the next item which we would probably discuss if we needed to would be Item No. 8, the method of computing depreciation. Mr. Hill has dealt with that to some extent and I presume you have someone to deal with that, Mr. Chambers?

MR. CHAMBERS: I am going to deal with that mostly in the operating, I think. Mr. Kirkpatrick says it could be

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dealt with separately.

THE CHAIRMAN: Yes, because after all you have various methods of computing depreciation.

MR. CHAMBERS: Yes, but it did occur to me that Mr. Steer's client might be interested.

THE CHAIRMAN: There is the straight line method, the unit method, and there are others which I could mention if I had a textbook here and I have not a textbook.

MR. CHAMBERS: I can very well see, I think, that the market sharing position and Mr. Stevens-Guille will take probably the week.

THE CHAIRMAN: That will be subject to what Mr. Harvie decides.

MR. HARVIE: I will have information definitely after recess this morning, I think.

THE CHAIRMAN: If you do not, Mr. Harvie, and will not know for a day or two, you can arrange it with other counsel and I will be ready to go on with it whenever you are ready to deal with it.

MR. HARVIE: Thank you. There is just one point I might mention that might come up possibly in the market sharing position, that I would like to suggest that the Conservation Board present evidence as to the basis of gas allowables now being adopted.

THE CHAIRMAN: Put in the form of evidence for the purpose of the record?

MR. HARVIE: Yes.

DR. BOOMER: You mean the method of computation?

MR. HARVIE: Yes, the method of computation. The question arises with us particularly in connection with what weight is given acreage factors, and such like and I think

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we should have that before we go into the market sharing position.

MR. STEER: If my learned friends will excuse me, may I at this time put in some corrections, Mr. Chairman, in Volumes 11, 12, 13 and 17.

(The corrections were then handed to the reporter).

.....

F. LeM. STEVENS-GUILLE, having been recalled, examined by Mr. Chambers, testified as follows:-

Q Mr. Stevens-Guille, you were yesterday describing the equipment that was required on the 1st of January, 1944, and also incidentally pointing out on the map the new equipment put in. Yesterday you dealt primarily with the pipe line system and if you will just carry on from there please?

A All right.

Q THE CHAIRMAN: There was one point that I thought of yesterday. You mention in your evidence the equipment of the main Compressor Station and you mentioned what has been added new. Will you give us what that was with regard to Compressor Station No. 3 in 1944?

Q In reply to the Chairman's question as to what new equipment was added in 1944, to compressor station No. 3, this equipment consisted of 1 600 horsepower Cooper-Bessemer gas engine driven compressor, and the necessary suction and discharge lines including an inlet scrubber on the suction line and the extension to the building to house that unit. It was not necessary to add additional auxiliary equipment in the shape of air compressors or water pumps, and of course the lines connecting that compressor which is on residue gas service boosting G.O.P. gas from their plant up to the Madison scrubbing plant, were

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- 1944 -

covered when I went through the pipe line maps.

Q And the equipment at No. 3 prior to the installation of the new consisted of compression machinery, I take it?

A Two 600 horsepower gas engine driven Cooper-Bessemer compressors, two 80 horsepower Clark gas engine driven compressors, one 80 horsepower Clark gas engine driven generator, and one electric motor driven cooling water circulating pump, one four-engine driven cooling water circulating pump, a boiler for heating the buildings, and that would, of course, include the boiler house and also equipment there and so forth, and the general requirements of the air system, including water lines, cleaning tanks and water cooling tower.

THE CHAIRMAN: Thank you.

A I arrived at the position yesterday having gone over in considerable detail the gas gathering system and having started to outline the compressor stations which the answer I have given to the Chairman just now completes to some extent, and I did stress on several occasions the cardinal factor in design was to insure that continuity of service would be maintained under all possible conditions. In the Compressor stations consideration must therefore be given to stand-by units. At compressor Station No. 1 there is installed one more gas engine driven compressor than will be required at peak load.

Now this unit does not just sit tight. The operating practice there is to carry running on the line one more unit than the current load requires. It is possible to do this by throttling back all the units operating. This provides almost instantaneous service if one should stop or have to be shut down for any reason, because the operator then only has to speed up the other units. They are all on manual throttle control on the governors, and that can be done in

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the matter of minutes.

At Compressor Station No. 3 it is not necessary to add such additional units because the volume handled by that station is small compared with the total volume, and should a machine stop or have to be shut down for normal repair and overhauls, the quantity of gas so lost to the market can be supplied from other sources. That, of course, is one occasion when the ability of the gas gathering system to supply gas comes into effect.

You will remember yesterday we went through the reason for looping lines, and for having the system so constructed that should one line fail for any reason, the gas requirements of the market could be supplied from other portions of the system. The looping of the line, I did not mention yesterday, provides yet another safeguard, if you were to replace the two lines by one line of larger diameter. Of course you run the greater chance of losing the capacity of that line in case of trouble. It is most unlikely that both looped lines will fail at the same time.

Coming back to the compressor stations now, in addition to providing alternative equipment on the main unit or a stand-by unit, as it is commonly called, that alternative equipment is provided on the essential services to this compressor station. The cooling water circulating pumps are normally driven by electric motors, but should the power fail and the power is carried to that water pump station on two entirely separate lines, one overhead and one underground, so that the chance of failure is comparatively small, there is a Ford motor-driven pump which can be put on the line and is operated on the line regularly to make sure that it is always ready for service.

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In the same way the air system is not dependent on one motive power. There are steam driven air compressors and electric motor-driven air compressors and finally a Ford engine driven compressor, so air should be available at all times to start whatever engines are necessary for operation under the particular loads being handled.

The construction of the headers at the compressor stations, the failure in which, of course, would shut down a part of the station, if not the whole, at Compressor Station No. 1 the header system is arranged in two halves, so that should one half fail the full operation of the station is not lost, but in addition to that the construction of these headers is to the very best standards of fabrication and done under the supervision of an experienced pressure welder who has been in oil fields for perhaps a matter of some fifteen or twenty years.

That I think covers fairly completely the salient points of design in the compressor stations, and we will now pass to the scrubbing plant, which is the next plant to which the gas flows on the Madison system, it having travelled through the Royalite gasoline plant on its way in the case of the wet gas gathered by Madison itself for the extraction of the gasoline fractions.

The residue gas from the Royalite gasoline plant enters the scrubbing plant together today with the residue gas from the B.A. transmission line which contains the residue gas from both the B.A. and G.O.P. plants. The scrubbing plant consists as has already been stated at this Hearing, of two units operating on different processes. One on the Seaboard system and the other on the Girbotol system.

H. LeM. Stevens-Guille,
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Here again in this Plant, in designing it, it is as important as ever to bear in mind the necessity that continuity of service must be maintained and therefore consideration must be given to having the units so arranged that where possible they can be shut down for maintenance work without interrupting the operation of the Plant and to provide sufficient capacity in the units so that should one unit fail the other units can take up the load. The Girbotol unit has a rated capacity of 50 million cubic feet per day with an overload capacity built into it of 73 million cubic feet per day.

Q MR. CHAMBERS: Mr. Stevens-Guille, just at that point in talking not only of the Scrubbing Plant but of any other machinery you talk about capacity and overload capacity. Now I as a layman have never been able to understand the significance of this overload capacity. Is it something that is capable of doing something in cases of emergency?

A That is the correct interpretation of it. The unit was built to handle normally a full load of 50 million cubic feet per day and consideration was given when it was being designed to the fact that the Seaboard unit might go out of commission during a peak load period and therefore the designer took this into account and made his units sufficiently large to handle 73 million cubic feet per day for short periods of time, stressing that that was not intended to be under continuous operation of the unit. In the design of the Scrubbing Plant the position was different to that when designing the gas gathering system. There are no generally recognized codes and specific methods to help anybody to design a gas gathering system. The designer has got to use his own judgment to quite a considerable extent. In building Plants however the position is somewhat different. There are recognized codes for the design and fabrication of

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Exam. by Mr. Chambers.

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the various pressure vessels required. All the pressure vessels installed in both the Seaboard unit and the Girbotol unit were designed to these codes and have been continuously inspected annually since the installation. Today there is a provincial law requires that unfired pressure vessels, as this type is called, be inspected annually but the Royalite had instituted such a system itself a matter of some 15 years ago and special steel inspectors employed by Imperial Oil came out for the purpose of carrying out this examination. There are in those units over 100 test holes, that is to say holes three-eighths of an inch in diameter drilled at selected places in the vessel and with suitable gauges measurements of the thickness of the steel at that point are carried out and recorded. This provides a very complete record of any corrosion that might take place. Reliance however is not put on the measurements from those holes only. An internal examination is also carried out of each vessel. There has been a general idea that the rate of corrosion in Turner Valley is high. These records have clearly shown that that is not in general correct. There are points at which corrosion is relatively rapid but it is possible to protect those points and to, in that way, insure that the life of the vessel as a whole will be the same, which in the case of units in Turner Valley is described in the language of a steel inspector as indefinite. That is to say the rate of loss of metal is so small that the life of the vessels at the present time cannot be stated in years. It is still an indefinite quantity. I might mention that Mr. Hill had access to and studied those records at the time he was making his appraisal of the Plant. I have said that corrosion as a rule is not rapid in Turner Valley. We did however have one disappointing case where rapid corrosion was experienced.

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That was in the Girbotol unit as first installed. The design was such that desulphurization and dehydration of the gas would be done in one step, by one contact of the gas with the re-agents being circulated through the units for that purpose. Unfortunately corrosion was very rapid indeed, not as might be expected due to the hydrogen sulphide but from the carbon dioxide in the gas. It became necessary to take drastic steps to correct this and in the summer of 1942 Royalite experimented with one method or one modification of the existing method to see if this corrosion could be arrested. Considerable success was attained but the general feeling of those responsible was that the certainty of operation of this modified system was not sufficient for the type of service the Girbotol Plant in Turner Valley is required to give. A complete change therefore was made in the operation and instead of carrying out the desulphurization and dehydration in one step it was split into two steps, the gas being desulphurized first and then dehydrated afterwards in a separate contact with a separate stream of re-agent. That system has now been in operation since December 1942 and appears to be going to be satisfactory. The examination of the Plant during the coming summer for corrosion and general cleaning should give what we hope will be the final answer to that question. In changing the Plant, the original units were re-used in some cases new service and some additional equipment was added. As has already been mentioned that expense was written off as an operating expense by Royalite and the Girdler people contributed to the extent of a rebate on throughput royalty to the extent of \$5000. The change in the system meant a large quantity of diethylene glycol contaminated with monoethanolamine was withdrawn from the system and is in storage. That was not taken over by Madison, that

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is still held in the Royalite inventory. The design of the headers and of the pipe work in the Scrubbing Plant follows the same general outline as those of the Compressor Plants, that is to say thought has been given to being able to isolate, where possible, individual units. The headers are split in two with valves so if one end goes down for any reason the valve can be shut and a large portion of the Plant still kept in operation. And the same applies on the outlet side as on the inlet side. There is a header from which three lines go to the Canadian Western main Turner Valley Station and through that into Calgary and a fourth line goes to the Canadian Western and joins their main line at Okotoks. It is possible, therefore, to examine the angle and repair lines without shutting down the Plant as a whole.

Now the Girbotol unit is mainly dependent on steam for motive power and process work. The Seaboard system is dependent on three powers, steam, electric power and gas engine-driven pumps. I should have said the Girbotol unit of course is also dependent upon electric power for the disposal of the H_2S extracted and that is a very important point. That Hydrogen sulphide is one of the most toxic gases known. Certainly one of the most toxic gases found in industry and must be handled with extreme care and its disposal is a matter of prime importance to the operating personnel in the first place and of course the population in the vicinity of the Plant also.

Now a question has been asked more than once why Madison should operate the Boiler Plant. The reason is a very simple one. The Scrubbing Plant is dependent on that Plant for steam and a failure to deliver steam would mean a failure to deliver scrubbed gas to the Canadian Western.

H. LeM. Stevens-Guille,
Exam. by Mr. Chambers.

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It is true that some 70 per cent of the steam generated is used by Royalite and Valley Pipeline combined but their operations are not dependent in the same way on continuity of service. The Gasoline Plant would merely lose revenue if its steam supply was either inadequate or completely lost. The Scrubbing Plant could operate on gas which had not been passed through the Gasoline Plant at all, for a short period anyway. It could operate for periods of considerable length with gas which has been passed through the absorbers without the rich oil in the absorbers having been sent through the distillation units of the Absorption Plant and stripped of the gasoline content there and re-circulated back to the absorbers. The Valley Pipeline could of course continue operation without the use of steam at all for, at any rate, even in winter, a considerable period of time. It therefore is clear that the Plant that must at all times have 100 per cent service from the steam plant is the Scrubbing Plant. There will come times again, just as there have in the past, when minor troubles have caused shortages of steam. No customer in Calgary probably ever knows that has ever happened and he will not ever know it again in the future in all probability because the system there was co-ordinated under a single control where the man on shift in the Scrubbing Plant could in those cases and did route the steam so that his supply was always adequate, and it is our positive opinion, after careful consideration, that that system is essential and it was for that reason that the boiler plant was transferred to the Madison. I think it is proper for me to say that as the person in charge of operations down there I was consulted on that point and I felt very strongly that that was the one and only sound way of insuring that full service could always be maintained insofar as it is humanly possible to do so.

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H. LeM. Stevens-Guille,
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The same reasoning applies to the Power Plant. It was transferred for the same purpose. It is essential that power be available to the Scrubbing Plant. We have, it is true, a stand-by gas engine to drive the fans, to circulate the air required and to dispose of the H_2S , hydrogen sulphide from the top of the stacks but that is a standby only and we would need that electric power to give adequate disposal and also provide activation of the Seaboard unit when operating under full load. The same point therefore arose and was dealt with in the same way with regard to electric power.

Now another point has been mentioned that in transferring the Boiler house to Madison, Madison is taking over more equipment than might be required at some future date.

(Go to page 1953)

Mr. Stevens-Guille
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-1953-

The point to remember there is that Mr. Hill had valued the low pressure boilers on the basis that they have only a few more years life and it is planned that when their life is finished they will not be replaced but steam from any excess capacity in the high pressure system would be used in the low pressure system, just in the same way as a certain volume of that high pressure steam is used in the low pressure steam today on peak loads.

The same thing applies to the power plant. The load factor in future years of that plant has been studied and, contrary to what Mr. Hill I think said here the other day, there is now every intention to instal another generating unit. Part of the load is, at the present time, purchased from the Calgary Power Company and as the total load falls, if indeed it does, then that portion of the load now supplied by the Calgary Power will again be supplied, as it was in the past, by the Power Station in Turner Valley.

I might perhaps mention here a point that was brought out that Mr. Hill was not fully conversant with as you pointed out, and that is the fuel dehydrator contained in the inventory of Girbotol equipment. That fuel dehydrator is at present dehydrating the fuel returned from drilling purposes and the reason for Madison taking over that dehydrator was this,- that when gas is being returned to the formation in future years at the beginning of the season it will have to be sent into cold lines which will have been lying unused throughout the winter. It will therefore be necessary to dehydrate that gas in order to prevent plugging troubles from gas hydrates in the return gas system.

The service now being performed for Royalite in dehydrating that fuel gas will be charged for. As a matter of actual fact the charge has not yet been set up on the books for

the reason that those of us who are in a position to work out the appropriate charges have been engaged or were engaged in this work but the amount, the service is purely a nominal one as the amount of dehydrating is a very small proportion of the total dehydration carried on at the scrubbing plant for gas being delivered to the market. It could of course have been handled the other way and Royalite have kept the dehydrator for the present and a charge made for the glycol stream used in the dehydrator but it was simpler in the long run to handle it in the way I have mentioned.

I think that, Mr. Chambers, is all that I wish to say in preface to reading my report. It has been rather a lengthy one, so we might turn now to my report.

Q MR. CHAMBERS: The report, Exhibit 77, deals with what you think will be required from 1945 to 1948 inclusive?

A It covers the 1944 actual construction as well as the estimated construction in the present year and on to 1948.

Turning then to page I of Exhibit 77,
report M-8.

1944 Construction

and

Estimated Construction in 1945 to 1948

Materials and Supplies

Introduction

In Proposal B, submitted by Madison at the Hearing in 1944, estimates were given on the cost of construction of certain projects. Details on each project were given in numbered exhibits in the report, and the costs were summarized against these numbers on page 31.

In Madison Report M-7, which Mr. Kirkpatrick presented yesterday as Exhibit 74, a summary was given in Schedule M-7-A/44 of the

Mr. Stevens-Guille
Exam. by Mr. Chambers

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actual costs of these projects. In some cases there were still small portions of the projects to be completed, after the closing date of December 31st for the accounting statements. The proportion of the work remaining was of such a small size that the total cost of the project can be estimated with reasonable assurance of accuracy. The total actual costs to December 31st 1944 are shown in Column (7), the estimated balance yet to be expended in Column (8) and the estimated cost of the completed job in Column (9), those columns being in the schedule referred to at the start of the prior paragraph which appeared in Exhibit 74.

In attachment #1 to the present report, a comparison has been made of the costs as estimated in Proposal B and the expenditures as given in the Schedule quoted above. In certain instances alterations in conditions made changes in plan desirable. In each such case the Board was informed of the situation and concurred in the changes proposed to meet the new conditions. In the case of pipelines, the Board agreed that the work of laying should be contracted to the Gentry Engineering Company at a cost approximately 25% higher than if the work had been done by Madison, as labour was not available locally to complete the work before freeze up. The comparison has therefore been made between the revised totals and the actual expenditures to December 31st, 1944 plus the estimated costs to complete the work.

If you will turn to that attachment #1 which is at the end of this report. I do not think that it is necessary to go through it column by column. Mr. Kirkpatrick went through his statement in that manner and this statement here is only to reconcile the actual expenditures as given by him with what our estimates were and if you will travel across to

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Column 8 you will see the total estimated expenditure given in Mr. Kirkpatrick's Schedule M-7-A/44, page I, Column 9 of Exhibit 74 you will see in Columns 9, 10 and 11 the quantity in dollars with the actual expenditures to December 31st, 1944 plus estimated expenditures for any unfinished projects, all of which were relatively small, and in column 11 ^{is} you see that every year under dollars/expressed as a percentage and it will be noted that these percentages are all of a small order mostly, the highest being only 3% and the others under 1%. We have not as yet closed the accounts for the first quarter of the year so I am not in a position at this time to reconcile our estimates for the work we have finished in 1945 with the actual expenditures but that will be available if necessary before the end of this hearing.

The totals covering the work outlined in Proposal B are shown as a sub-total on Attachment #I and are as follows:-

	\$
Grand total, Proposal B, page 31	203,310.00
Less item 12(a)(5) "Instal thirteen temperature recorders on gas gathering system which was not carried out in 1944, deducting	<u>3,900.00</u>
Sub-total on Attachment #I, Column 5-	199,410.00
Additional cost authorized by Board (Column 6)	<u>30,220.00</u>
Revised grand total (Column 7) -	229,630.00
Total estimated expenditure, Schedule M-7-A/44, page 1, Column (9)	<u>229,360.12</u>
Difference	269.88
Percent difference	<u>0.1</u>

Or as a percentage 1/10 of a cent.

The construction items listed on page 2 of Schedule M-7-A/44, with the exception of the last, were alterations, of a relatively minor nature, to the existing

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system and no reference was therefore made to the Board before carrying them out as they were necessary to the conduct of the business.

1944 Construction

The majority of the new construction carried out in 1944 was done under direction of the Natural Gas Utilities Board and will therefore be discussed under their Board order numbers. For the cost figures, reference should be made to Schedule M-7-A/44, page 1, attached to the Madison Report M-7, Exhibit 74.

Board Orders Nos. 2 & 4

Board Order No. 4 modified Board Order No. 2 in regard to the extension to suction line #1 from Compressor Station #3, which is described in sub-section (3) below.

You will remember that that line radiates in a general northwesterly direction from Compressor Station #3. The modification was necessary due to changes in well operating conditions which had occurred since the estimate submitted to the Board at the Hearing had been prepared in the fall of 1943.

1. The addition of one Cooper-Bessemer GMV-6 compressor unit, to make a total of five installed, was required to lower the suction pressure to keep the pressure gradient on the gas gathering system down to the point at which crude oil wells already connected could continue to enter the system and the quota be produced from the lower capacity gas cap wells.

Q MR. CHAMBERS: You are talking there about which Compressor?

A It seems in the set up here there is something not clear in the order that they cover these three items. The next item, the third item in this covers the modifier that I have

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mentioned. I am now talking about Compressor Station #1 which has not been very clearly identified in this report.

Q That is in clause No.1?

A In clause 1 and clause 2.

Q Those refer to Compressor Station No.1?

A That is right. Item 2 also refers to the gas gathering system contributory to Compressor Station No.1.

2. Extension of the existing gas gathering line #3 westward from Royalite #19 to Royalite Battery #14 was required if gas in that area, being produced at a pressure sufficient to enter the gas gathering system, was not to be flared. At the present time over 1,500 Mcf. per day is being gathered through the extension, and that is at the time of writing of course and I think it is substantially true today, and two to three times this amount should pass through the line when drilling in the area has been completed and the proposed laterals to Royalite Batteries #13 and #15 laid in 1945.

Now item 3 refers to Compressor Station No.3.

3. Extension of suction line #1 from Compressor Station #3 to Devonian Test #1 was required to pick up approximately 1,500 Mcf. per day of gas being flared in that area. Tying in suction line #1 to suction line #4 required 2,600 feet of light weight 6 inch pipe to be laid, but enabled 5,100 feet of heavy 4 inch pipe to be picked up and used in the extension of suction line #1 mentioned above, which is a high compressor line or relatively high compressor line, thus reducing the total investment in the system.

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Reference to Schedule M-7-A/44, Construction Estimate

No.1, 20 and 21 shows:-

Expenditure to Dec.31/44 (Column 7)	\$ 102,703.38
Estimated cost to complete (Column 8)	<u>1,636.74</u>
Total estimated cost (Column 9)	<u>104,340.12</u>

As only a small amount of work remains to complete the project, the total expenditure will agree closely with the amount estimated.

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Board Order No. 3

The Board directed Madison to instal a Cooper-Bessemer GMV-6 compressor unit at their Compressor Station #3, together with the necessary suction and discharge lines, to pick up from the Gas & Oil Products plant the residue gas then being flared and to deliver it to the market. Madison was instructed to lay the discharge line to effect a junction with the British American residue gas transmission line at Hartell.

The larger portion of the work had been completed by December 31st, 1944, the only material item of any size which had not been received, being the heat exchanger for cooling the jacket water. Reference to Schedule M-7-A/44 under Construction Estimate No. 13 will show the position was as follows:

	\$
Expenditure to Dec. 31, 1944 (Column 7)	109,814.71
Estimated cost to complete (Column 8)	<u>13,285.29</u>
Total Estimated Cost (Column 9)	<u><u>123,100.00</u></u>

Again, as only a relatively small amount of the work remains to be done, the total expenditure will agree closely with the amount estimated.

That compressor has, of course, been delivering residue gas from the G.O.P. plant to the market since January 1945.

Board Order No. 6

The British American had laid a residue gas transmission line from their gasoline plant in the south end of Turner Valley to the Madison Scrubbing Plant in order to deliver their share of the gas to the market, together with the volume of gas from Gas & Oil Products that Madison would pump into the line as instructed in Board Order No. 3. It was necessary to tie this transmission line into the Scrubbing Plant headers. The Board directed Madison to make this

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connection in order No. 6, installing at the same time suitable metering equipment. This was done at a total cost of \$3,063.89, which is shown itemized under construction Estimate #14 in Madison Report M-7, that is Exhibit 74, Schedule M-7-A/44, page 1.

Board Order No. 7

The majority of the gas from the Model Battery, at which Model #1 & 2 and Royelite Model #1 are separated, had been used for several months prior to the summer of 1944 for fuel to wells drilling in that area. When this use of the gas ceased some 1,000 Mcf. per day would have been flared, if not connected to the gas gathering system. The Board therefore directed Madison to lay a lateral from Battery #6 to the Model Battery to gather the gas.

A 3" lateral was laid and suitable metering equipment installed at the Model Battery. The total cost was \$2,030.30, which is shown itemized in Madison Report M-7, Schedule M-7-A/44, page 1, under Construction Estimate #22.

Construction Not Under Board Order.

Certain other construction work was carried out without a Board Order, but with their concurrence expressed in the form of a letter. For ease in identification and reference to costs in Madison Report M-7, this will be referred to under the Construction Estimate numbers which identify the work in page 1 of Schedule M-7-A/44 attached to that report.

The need for this construction resulted from extension of the gas gathering system into the north end of the field to collect gas from the Home Millarville and British Dominion wells. In addition to the actual extension of the line it was necessary to loop a section of the main and to install a sixth compressor unit at Compressor Station #1 in

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order to keep the terminal pressure of the line reasonably below the maximum poperating pressure of separators at the well heads.

That is to say the separators used are standard equipment with a maximum operating pressure of 430 pounds and if the line pressure is not reasonably maintained below this there is always the chance that the safety head in the separator, that is a white disk of metal held in flanges in the head of the vessel, put in there to protect the vessel so that if the pressure rises beyond the permissible operating point, the disk bursts and the pressure is relieved. Of course crude oil is lost at the time and while it has saved the unit it causes quite a little trouble with the battery, so that there must be a reasonable leeway below that point so that if somebody turns a large volume of gas into the system unexpectedly, putting the pressure up, or if a plug develops or anything of that sort, the safety heads on the separators of these wells are not infrequently blown.

Alternatively to adding the additional compressor unit, a further length of the main line could have been looped and the same terminal pressure attained; but calculations indicate that the pipeline would then be oversized in future years, whereas additional compressors will have to be added in any case to lower the suction pressure as the operating pressure of the crude oil wells decreases. The combination selected therefore was preferable from a long range point of view and sound economically.

The connection of this additional gas from crude oil wells to the system will cause an excess of residue gas to be available in summer months to market requirements. In order that this volume will not be flared, provision has been made to convert one compressor unit from wet gas booster service

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to return gas service during the summer months. For this purpose of returning residue gas to the ground a system of high pressure pipe has been laid under arrangement with Royallite to three of their gas cap wells located close to the plant, namely:

Royalite #17

McLeod #4

Midfield #1

Reference to Schedule M-7-A/44, under Construction Estimates Nos. 15, 16, 17 and 18, will show the position to be as follows:-

	\$
Expenditure to Dec.31, 1944 (Column 7)	105,474.42
Estimated cost to complete (Column 8)	<u>19,545.58</u>
Total estimated cost (Column 9)	<u><u>125,020.00</u></u>

Although the estimated cost of the uncompleted work is somewhat higher than in the case of previous items discussed, it is expected that the final cost will closely agree with the original estimate.

The remaining expenditures were of a relatively minor nature and will be briefly described under the Construction Estimate numbers which are used to identify them on the cost sheet, Schedule M-7-A/44, page 2 of Madison Report M-7, Exhibit 74.

Estimate No. 2 and 3A

The engineers of Cooper-Bessemer Corporation recommended that the cooling water systems at both Compressor Station #1 and #3 be altered so that distilled water would be recirculated through the engine and compressor jackets and a separate supply of cold water go to the lubricating oil coolers. This was in order that the engine could operate at a higher load factor with less operating troubles and oil consumption.

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The altered cooling system would give better operation when the machines were fully loaded, they stated. These changes have been nearly completed at Compressor Station #1, \$9,230.56 having been expended out of \$9,730.25.

The work has now been completed and is in operation and giving complete satisfaction.

At Compressor Station No. 3 the same degree of completion has not been reached, delivery not having been received of the heat exchangers and water circulating pumps required, and only \$1,563.24 out of an estimated total of \$11,400.00 had been spent to December 31st, 1944.

The heat exchangers have been received but the water circulating pumps are still to be delivered.

Estimate #5.

The twenty flowmeters in this item were for installation on the gas gathering lines at Royalite Batteries. Prior to the formation of Madison the meters on each well were used to measure the gas in the gathering systems, but under utility operation meters actually on the gas gathering system itself are required. These meters were not installed in 1944 due to lack of manpower. It is proposed to instal them in 1945.

I might perhaps mention a point there to clear up a statement by Mr. Hill. That is when Royalite had the complete operation and the control, and at independent batteries Royalite installed a meter to measure the gas into its gas gathering system, but at its own Royalite battery it utilized the meters which were on the separators for the individual wells, and the change that I have referred to here in Estimate #5, was for Madison to instal meters on its gas gathering system at these Royalite batteries in order to

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measure the gas into its system at this point in the same way as Royalite has measured it at points where independent batteries were connected to their system, and put the whole method of gas measurement on the same footing.

Estimate #7.

The space formerly used for a workshop was included in the enlarged boiler plant, therefore other provision for a shop had to be made for storage of tools and equipment and for making repairs which are of too small a nature to be sent to the Royalite Machine Shop, or other shops too when used. A separate building was erected using mainly secondhand material purchased at valuation from Royalite. This was completed in 1944 at the cost shown or \$2,908.64.

Estimate #8

This item includes such tools as hydraulic jacks, electric driven grinder, chain hoist and trolleys required for the installation and maintenance of such units as the gas engine driven compressors. The total outlay amounted to only \$500.76.

Estimate #9

This office equipment was required on formation of the company for starting two offices, one in Calgary and the other in Turner Valley.

Estimate #10.

Sundry equipment grouped under this item included such items as eight flow meters required at various points to meter volumes previously estimated; rescue equipment which had not previously been obtainable due to war conditions, such as a self contained oxygen breathing apparatus and

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inhalator; laboratory equipment for testing wells under revisions in the standard codes; valves, including back pressure controller, for releasing excess residue gas to the flare during summer months; transformers to handle additional loads connected to the electric power plant; extension of blowdown line from inlet scrubbers at Compressor Station #1 to 10' by 40' tanks now used for collection of the increasing quantities of crude oil trapped out; and several minor items.

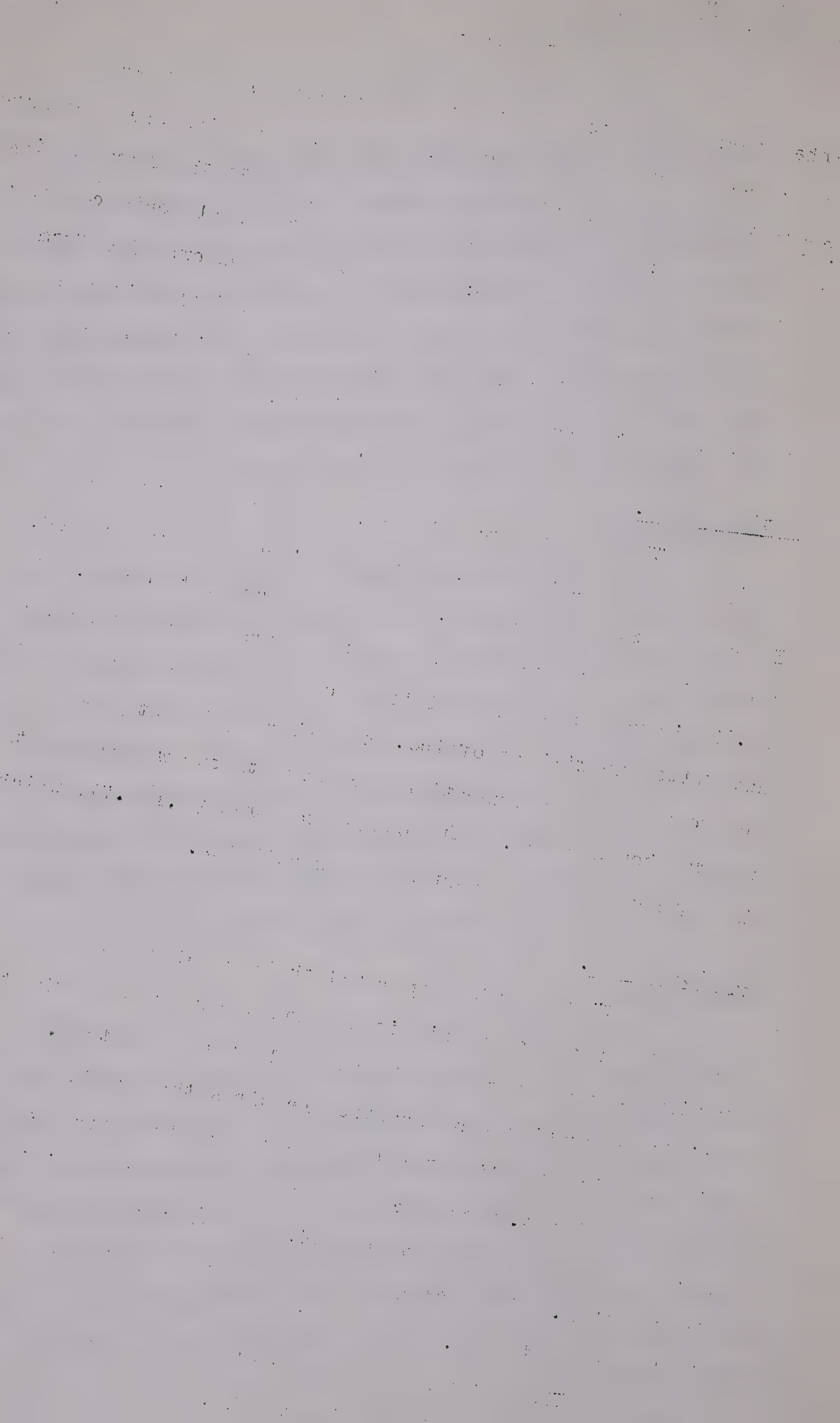
Estimate #11.

When Madison was formed, in place of making the large outlay for new warehouse, a warehouse building was rented, - I have stated here rented. That was a complete error. It should have been purchased, and it appears on Report M-6, as Mr.Hill's valuation in Exhibit 59 on page 69, - from Royalite and fitted up with an office, and other equipment such as bins, to provide the accommodation necessary to our warehouse staff and warehouse stock. The outlay was only \$2,122.77, which is a fraction of the cost of a new building.

Estimate #12.

When Royalite operated their Gasoline Plant and Scrubbing Plant as a unit it was not necessary to meter the residue gas as it passed from one plant to the other. Under utility operation good practice requires that residue gas from the Royalite Gasoline Plant be metered at the entry to the Scrubbing Plant. Supply conditions prevented the orifice changers being delivered in 1944, but provision was made to instal them. The fittings will be installed when received in the current year.

Those fittings have recently been received and will be installed during the coming months.



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Estimate #19.

These rights of way were required for the extensions to the gas gathering lines already described above. The cost of this item is kept separately for ease in accounting, such as paying rents, etc.

Estimate # 23.

Purchase of this half ton truck was in normal replacement of a unit that had become worn out in service, having travelled over 63,000 miles.

There I would like to stop because that is a truck that has caused so much difficulty.

MR.BLANCFARD: I do not want him to stop at the truck, sir.

WITNESS; I would like to correct that statement in here, as it is not quite right. That was the original intention. I do not care to go into the report which was based on a lot of what we were going to do on items of work and purchase of material. Actually what happened was that an additional half ton truck was purchased and the old truck was repaired and is in service as a stand-by unit, and for additional work which is developing as the operations increase, so the original truck exists plus a new one.

Estimate #24.

It had been anticipated that Calmont #1A and 2A would be connected to the gas gathering system in 1945, but a combination of circumstances, including bringing in of wells above previous average size for the area and the cessation of drilling under the Wartime Oils scheme, reducing the use of gas for drilling fuel, caused some 750 Mcf. per day to be flared from these wells in the early winter. As ditching

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was still possible, after receiving an application from the Calmont Oil Company, the Board advised Madison that these wells should be connected without delay.

And that was done and the gas has been gathered in those two wells.

And that completes the work that was actually done in 1944.

1945-1948 Estimated Construction

These items will be described in the order in which they appear in Madison Report M-7, Exhibit 74, Schedule M-7-A, 1945-1948.

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I might have repeated those headings for convenience, but I failed to do so. Item 1 is estimated cost to complete projects commenced in 1944 (Per schedule M-7A - 1944). That we have already dealt with in the schedule to which repeated reference has been made. It is self-explanatory and has been covered under the individual items in the 1944 construction program.

Item 2 is automotive equipment which is to replace units and also to make provision for an additional unit. These estimates cover the normal replacement of existing units with the addition of one unit required for the increase in the work of checking meters and testing wells.

Item 3, loop 1700 feet of existing 440 volt line from Power Station to Water Pump house. The main overhead power line to the Water Pump Station is at present overloaded causing a drop in voltage, which tends to cause overheating of the motors driving the pumps and some loss in speed and hence capacity.

Item 4, office furniture and equipment, Turner Valley and Calgary. This estimated expenditure is to cover replacements and also additions in equipment required to handle the increased volume of office work.

Item 5, Plant tools. This small amount is to cover the purchase of a pulsometer for checking flow-meters operating under pulsating conditions. That incidentally is the most recent piece of testing equipment produced for that purpose and should about settle the question of the exact volume passed by the meters operating under pulsating conditions.

Items 6 and 7, extend gas gathering line #3 northward to Battery 13 and extend gas gathering line #3 southward to Battery 15. You will remember that we covered those when we went over the map yesterday. The extensions as

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proposed are marked in red. The extension of gas gathering line #3 to Batteries #13 and 15 will gather an estimated additional volume of gas of some 3,000 Mcf. per day when drilling in that area is completed in the near future.

Item 8, lay 6 inch line from Battery #17 to junction of lateral from Okalta #9 and #10. The 6 inch pipe will replace 4 inch pipe in the section of suction line #1 to Compressor Station #3 between Battery #17 and the junction of the lateral from Okalta #9 and 10. This increase in line capacity will be required as the operating pressures of the wells connected to the line decrease. That you will remember we also referred to on the map yesterday.

Item 9, lay 6 inch suction line #5 in L.S.D.16-7-19-2-W5. This will shorten the suction line and release pipe for use elsewhere in the system and at the same time reduce the pressure drop in the system. That I also covered yesterday when we were looking at the map.

Item 10, instal heaters and drips on existing lines. To keep the gas gathering system free from hydrate plugs, it is essential to maintain the flowing temperature of the gas above the temperature of formation of gas hydrate at the line operating pressure, or approximately 50 degrees Fahrenheit. Heaters have been installed at numerous points in past years with marked improvement in the line operation and considerable reduction in operating expense. The lack of manpower made it impossible to carry the programme to completion in 1944, and the money budgetted for under this item will cover all the remaining installation required on the existing system to insure trouble free operation.

Item 11, instal 15 gas flowmeters. This covers the number of meters it is necessary to purchase for installation at Royalite crude oil well batteries to meas-

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sure the gas into the gas gathering system. As mentioned under Estimate #5 above, it had been planned to do this in 1944 but lack of manpower prevented it being carried out. Sufficient labour should be available in 1945 to complete the work.

Item 12. Construct new fanhouse at Scrubbing Plant. This is another item that has been referred to on several occasions in the past and after reading what I have actually written, I will give a little further explanation. The fanhouse building at the Scrubbing Plant was erected in 1925 and is now obsolete in design. As now set up it presents a hazard which has been accentuated by the concentration of hydrogen sulphide in the stack vapours through the operation of the Girbotol unit. It was the scene of a fatal accident in December 1943. Plans to rebuild it have been held up by war conditions, but it is believed that the material required may be obtainable during 1945, therefore it is planned to proceed with the work at the estimated cost shown. Now the first thing I have got to admit is that once again I have chosen an unfortunate word. Obsolete is misused according to the definition Mr. Hill gave us of that word yesterday. He, you will remember, said that obsolescence was governed by the unit that replaced the obsolete unit being operated at a lower operating cost, purely an economic problem. Now I did not have that in mind when I used obsolete here.

THE CHAIRMAN:

I like your idea very much though.

A I should then perhaps, sir, say that its functional depreciation does not come in here because it is operating to complete efficiency from the processing point of view. What I should have made clear was that our experience has shown that there is a hazard there and a very serious hazard in view of the toxicity of the hydrogen sulphide and we therefore naturally intend to

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remove that hazard. We have, as I have already mentioned, two motive powers to these fans, one electric and one gas engine and we felt that the proposed change would obviate an accident of the nature we unfortunately suffered, the very first that we have ever had or the first fatality we have ever had in the operation of these plants. But we found that it is open to human failure and therefore is not positive enough in view of the danger, and we are proposing here to put that situation straight. Actually we do not at the moment propose to rebuild that house. We propose to add a steam turbine drive to one of the fans and to have that fan in constant operation so that there is a positive pressure on the headers at all times. Actually the accident, you will note from the date, occurred after Mr. Hill's valuation and this point was never discussed with him at all.

Q I wonder, Mr. Stevens-Guille, if you would describe briefly the type of building contemplated. The item is a fairly large one, \$30,500. Can you give us any detail?

A We do not propose at the present time to proceed with that item. We propose to make alterations to the present building which we think will take care of the situation for the present at any rate by removing the hazard. Instead of the cost of \$30,500 our proposed changes will cost in the neighbourhood of 3 to 4 thousand dollars.

Q MR. CHAMBERS: What was that?

A 3 to 4 thousand dollars, I would say from my memory, but we have not made up an estimate of it yet.

Q We will have something on that before the Hearing closes?

A Yes.

Q But you are not proposing now to spend or make a capital expenditure of \$30,500 in 1945 in respect of Item 12?

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A That is correct.

Q As shown on Schedule M-7A of Exhibit 74?

A That is correct. That complete estimate is in the course of being made up now and will be available certainly before the Hearing closes, in a matter of a week or two.

MR. CHAMBERS: Might I suggest to the Board it might be a good time to rise. Mr. Stevens-Guille's throat is getting a little husky.

(At this stage there was a short adjournment taken.)

THE WITNESS: Proceeding to read Exhibit 77, page 12, Item 13. I gave all the information you wished on that fanhouse?

Q THE CHAIRMAN: Yes, except I might ask this. If you went on with the \$30,500 building what type of construction would it be?

A You mean whether it is going to be wood or a steel building?

Q Yes.

A That had not been finally decided but a steel building could be included at that price.

Q MR. CHAMBERS: A steel building?

A A steel building could be built included in that price.

Q That would be steel girders?

A A steel frame building.

Item 13 is instal high pressure cylinders on one GMV-6 unit including suction and discharge headers. Preliminary estimates indicated that the volume of residue gas from crude oil wells in excess of market requirements would be within the capacities of the Bow Island repressuring station and one GMV-6 unit in Turner Valley to handle. Provision was made to convert one GMV-6 unit and to lay the necessary input lines under Construction Estimates Nos. 16 and

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17 shown on page 1 of Schedule M-7-A/1944 of Madison Report M-7 (Exhibit 74). As further information came available, a re-check was made which indicated that two instead of one machines would be required in Turner Valley. High pressure cylinders and other high pressure fittings required were ordered. The input lines were also redesigned to handle the larger volume, which accounts for the cost of this item (see Estimate #17, Schedule M-7-A/44, page 1) being \$3,290.00 greater than estimated in Madison Proposal B. If the Ammonia Plant goes on half load in 1946 and ceases operations at the end of that year, estimates show that a third Compressor unit will be required on return gas to the formation service in 1946, therefore provision has been made to purchase a third set of high pressure cylinders. That is being carried out at the present time in so far as the work for 1944 and 1945 is concerned. Two cylinders are on the way up here at the present time, not been received and the remaining one will be shipped during the current month.

Item 14 is instal 10 inch water line to and from zeolite storage tank and headers. Labour conditions did not permit a close inspection of the 10 inch lines between the zeolite water storage tank and Compressor Station #1 in 1944, but indications are that corrosion in these pipe lines will make it necessary to replace them in the near future. A thorough examination will be made during the coming summer. The money is provided of course in the budget item but does not necessarily mean it will be expended unless this inspection indicates that it is necessary. That tank, I might mention, has a 10,000 barrel capacity and contains cooling water for the Compressor Station No. 1 and is another of the standby features built into the Plant in part for use in an emergency. It

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might surprise people to know that the Sheep River frozd up twice in the winter of 1943-44 and there was no water available at all from that source. But due to the provision of this tank and another tank of similar capacity for cooling water the Plants were able to continue in operation. The river froze off shortly before midnight and it was nearly noon next day before sufficient water was flowing in the river again for complete Plant purposes. Had that provision not been made of course, there would have been an interruption in the supply of gas to Calgary.

Q DR. BOOMER: I am not quite clear on the relation of that water system to the water system referred to in Item or Estimate No. 4 on page 7.

A It is part of that system. We have got a 10,000 barrel tank full of zeolite softened water which prior to these changes was used both in the lubricating oil coolers and the engine jackets. Now the engine jackets are cooled with distilled water which is circulated around the units and back through the distilled water to our own water heating exchange. We can use and did use on this emergency this zeolite water for cooling engine jackets as well as the lubricating oil cooler. We left our pipe in such a way that we can do it again should such an emergency arise so that we are not solely dependent on Sheep Creek for water.

Item 15, instal low pressure Scrubber for purifying vapours. The vapour from Royalite Gasoline Plant are at the present time flared, because they contain too high a percentage of hydrogen sulphide to be used for fuel unscrubbed. That hydrogen sulphide content is between four and five thousand grains per 100 cubic feet. They are, however, available at 70 psig. and in volume amount to nearly the quan-

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tity of fuel used in the Main Boiler House. If the necessary lines and scrubber were to be installed using a sidestream off the MEA circuit of the Girbotol unit, the hydrogen sulphide content could be reduced to the point where the vapours would become suitable for fuel to the boilers. Provision for installing the scrubber has been made in this item. If carried out it would have the effect of conserving a volume of residue gas equal to the vapour volume. Further study is required to determine whether or not it would be economic to carry this project out. This study has not yet been made. As can be seen it is purely a matter of cost and it might be of interest to say that we tried using these Plant vapours in the boilers as fuel some 4 or 5 years ago and at that time the sulphur content, due to the lower content of the wet gas, the lower sulphur content of the wet gas was approximately 2000 grains and we found that in the course of time corrosion took place in the fireboxes and the boilers and it was therefore uneconomic to use that gas for that purpose. Dr. Katz, you will remember, made the suggestion that this should be studied again and we had also got the same intention in mind.

Item 16, instal one GMV-6 Cooper-Bessemer Compressor at No. 1 Main Compressor Plant. As the operating pressure of the crude oil wells decreases, it is planned to lower the suction pressure at Compressor Station #1 in order that the majority of wells may continue to deliver gas into the line. Estimated operating volumes and pressures as given in Madison Report M-2 indicate that a seventh unit will be required in 1946, and an eighth early in 1948. Present estimates point to the desirability of putting in the foundations for the eighth unit in 1947, so that the unit could be installed and put in operation before thaw-out in 1948. That item I think explains itself in view of the complete explanations that have

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Item 17 - Extend Repressure Lines.

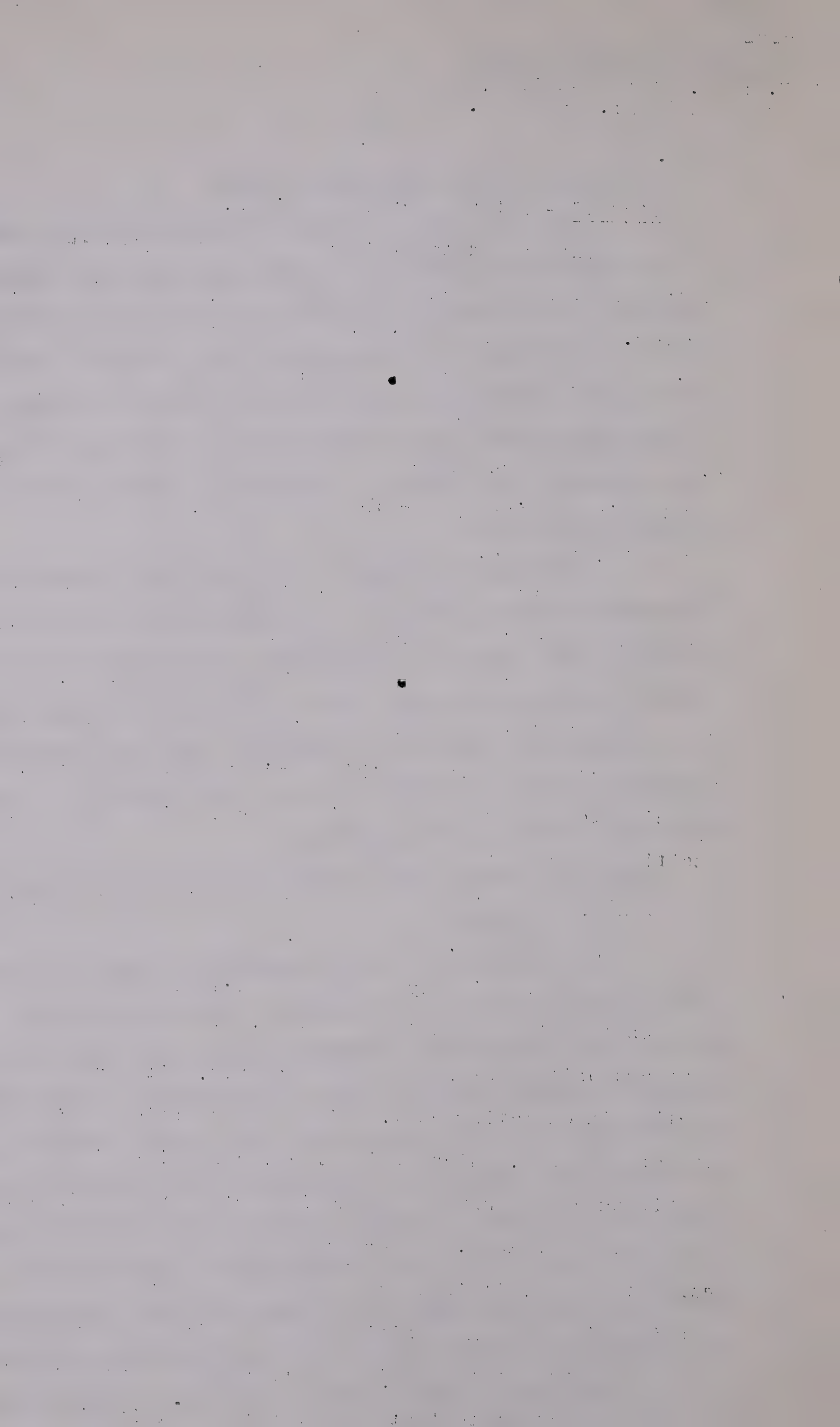
The only data available for estimating the capacity of the input wells selected to take gas, was their production records. It is possible that build up in pressure around the bottom of the holes will be greater than estimated, which would cause the input pressure to rise above the capacities of the compressors; hence provision has been made for extending the input line system to other wells, should this become necessary, in 1946.

The higher pressure cylinders being purchased have a maximum operating pressure of a thousand pounds and it is planned at the start to operate them at 800 pounds, so some leeway has been given there but it may be in view of the complete blackout of data on this subject that the estimated capacity to take gas will be in error sufficiently to require additional wells to be connected.

Item 18 - Install two external reboilers at Scrubbing Plant.

By 1946 it may become possible to carry the scrubbing load on the Girbotol unit throughout the year and place the Seaboard unit on standby operation only, with consequent reduction in operating cost. With the exception of the reactivator reboiler, which is internal, all units likely to require servicing can be shut down and inspected and repaired while the plant is under load. Before depending on the Girbotol unit to carry the load, it is deemed expedient to put the reactivator reboiler in the same position by replacing the present internal unit with two external units which could be shut down in turn.

Further to that I should say that it will be necessary to keep the Seaboard activator by pumping solution over



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them in order that they can be brought into service at a reasonably short notice. This point of course is conditional on many factors which are not known at the present time and it is merely put in here because we have been asked to budget over to the year 1948. All these items would have to be carefully reviewed in the light of the information which will be gained between now and then.

Item 19 - Extending Gas Gathering System.

The specific needs for extending the gas gathering system can be foreseen, and have been provided for, in 1945. For the years 1946 to 1948 inclusive estimates show that no major changes will be required, therefore \$10,000.00 has been budgetted for in each of the remaining three years to cover any minor extensions or alterations that may prove to be desirable.

That is a point referred to in the same way by Mr. Kirkpatrick in his evidence yesterday. We anticipate there may be small changes. We do not anticipate any large changes in that period of years.

That completes that section of the report.

The next section of the report is headed "Material & Supply" and is in support of the warehouse inventory which was covered yesterday by Mr. Kirkpatrick.

Material & Supply

In Schedule M-7-B to Madison Report M-7, Exhibit 74, an inventory is given of the materials and supplies on hand as of November 30th 1944.

The reason for giving it as of November 30th, 1944 was covered by Mr. Kirkpatrick. That was one of the regular dates of stock taking in the warehouse.

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From the total inventory certain items are shown deducted which, while in stock at the date of the inventory, were only passing through, having been brought into stock for specific jobs in the course of construction.

The net operating and maintenance inventory, after deducting the items mentioned above, totals \$93,134.16 as given in Column (3) of the schedule.

And I think Mr. Kirkpatrick suggested yesterday that the allowance should be \$98,000.00 even, anticipating that the stocks would rise just a little above or a little below that figure.

It will be noted that some six items represent over 75% of the total, therefore the reasons for the size of stock of these items only will be covered.

All the other items, the pipe lines, in most cases are self explanatory.

Class No. 12, that is the left hand column in the schedule 7 (B) of Exhibit 74.

Class No. 12 - Greases, Oils & Waxes

This mainly covers lubricating oil for the gas engines driving compressors, solution pumps and electric power generators. This stock is kept in a central storage tank, and supplies obtained by the truck load for economy in handling. It is essential to keep sufficient inventory on hand in case supplies of the special lubricant used do not come forward to schedule.

And that has been specifically proved in the last year or so when lubricating oil has not always been available in grades we use at short notice.

Class No. 14 - Chemicals

The diethylene glycol, monoethanolamine and soda

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ash, which form the bulk of the value, are the reagents used in dehydrating and desulphurizing the gas. It is essential to keep a standby charge on hand in case of major plant trouble resulting in loss of solution, as it would take weeks to replace these reagents, especially the first two, which are essential to the war effort and in short supply. Soda ash is purchased in quantity to obtain the favourable differential in price.

That break which we did have, which I mentioned yesterday, in January 1932, we did lose a large volume of soda ash and we were able to replace it because of this policy of having a stock on hand, that policy was in use at that time.

Class No. 26 - Salt

The salt is used to regenerate the zeolite softener for boiler feed water. It is also purchased in quantity to obtain the favourable differential in price.

Class No. 31-32 - Parts for engines, compressors and pumps.

To maintain all the above mentioned running equipment in continuous operation, it is necessary at this distance from the source of supply to keep the supply of parts shown. This is particularly true under present conditions when even the commonest replacement item cannot be obtained under several weeks.

Very often that runs into months. We have some items still outstanding which have been ordered certainly in August of 1944.

Class No. 63 - Line pipe, nipples & steel tubes.

The inventories of line pipe are somewhat above the amount necessary for repairs because, in order to get the pipe in time to carry out construction in 1944, orders had to be

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placed before the routes had been surveyed. The longest route possible had therefore to be provided for as there would not have been time to obtain additional supplies had any shortages resulted. These inventories will be reduced to normal after the 1945 construction programme has been completed. Included in this item are the spare steel tubes for the heat exchangers in the Girbotol Plant. The quantity required for probable replacements must be brought into stock ahead of time under existing delay in deliveries, or continuous operation of the plant would not be insured.

We had to retube the reboiler for the reactivator in 1942 and we had to wait a matter of some six weeks after the plant had been shut down before we could start it up again because the tubes were not available when wanted.

Class No. 65 - Elbows, tees, flanges, union couplings, plugs.

A range of the above fittings must be carried in order to provide for ordinary replacements and minor jobs. Special requisitions are always placed to bring into stock the number of such fittings required for construction jobs of any kind.

That is to say we only carry that much as is required for ordinary maintenance and repairs and breakdown. When a construction job comes up a special inventory is brought in.

Class No. 67 - Valves & Valve parts

Same general remarks apply as for Class No. 65.

Class No. 77 - Asbestos, leather and rubber packing

New gaskets are required nearly every time a unit is overhauled. It is therefore necessary to keep a large range of supplies on hand to prevent delays in overhaul and repair jobs.

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That covers the supporting data offered for the list of supplies and completes this report as we have already looked Schedule 1 and the map in the back pocket.

I think that is all, Mr. Chambers.

MR. CHAMBERS: And I have no further questions. You can answer questions now on cross-examination, Mr. Stevens-Guille.

THE CHAIRMAN: Mr. Fenerty.

CROSS-EXAMINED BY MR. FENERTY.

Q Mr. Stevens-Guille, I am to understand, am I not, that you have outlined as fully as possible those reasons which were given consideration in deciding what assets would be transferred to the Madison Company?

A I have endeavoured to do so, sir.

Q Yes, and you spoke of the anxiety to have everything which was necessary to afford continuity of service, that those would be made available, I think that is the real thing?

A I think that is the point of what I said.

MR. HARVIE: A little louder if you will, Mr. Fenerty.

MR. FENERTY: I am sorry.

Q MR. FENERTY: Was there some anxiety at that time that if all of the essential elements of the operation were not transferred to the Madison Company, that they would not be made available by the Royalite Company?

A Oh I do not think there was any question of availability, Mr. Fenerty. Royalite, I had no doubt, would be prepared to supply steam.

Q Yes?

A That is to sell the steam. It is the question which I emphasized, as to the centralization of control where that control is required.

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Q I see. Well now as far as the power is concerned, my understanding is that approximately three-quarters of the power as ^{apart} derived from the boilers is used in operations other than those of Madison, is that correct?

A You say apart from the boilers?

Q Yes.

A The steam.

Q Now which is it?

A The power stations are electric generating stations.

Q It is the steam plant probably that the three-quarters of it is used?

A Yes, I think the actual figure was around 70% for 1944.

Q And would the element of control enter into that, where 70% is used by the Royalite Company?

A I do not think I understand your question. The control is with the operator, who is Madison.

Q My understanding is that the only control we will say is as to the steam plant, the steam power you felt that it was advisable to have that with the Madison Company?

A Very definitely.

Q Although 70% of it was in fact used in the Royalite operations?

A That is quite true, but the point is not the quantity, The point is the essentialness of the continuity of the supply.

Q Yes. You know how the City of Calgary gets its power, do you not?

A I understand from the Calgary Power Company.

Q Under contract with the Calgary Power Company?

A Yes.

Q Would you say that was a sound system?

A For the City of Calgary it might be, but I have seen it happen in here, the very thing that we cannot afford to have

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happen in Turner Valley and that is a surge on the line. A surge on the power line immediately kicks off all the electrical equipment operating on that line and throws the whole process out of gear.

Q Now in the City of Calgary power requirements, continuity of course is essential, is it not?

A I would not say so, no.

Q Is it not?

A An interruption such as a matter of seconds would probably have no effect on the operations of the City of Calgary but it would very definitely have an effect on the operation of a plant in Turner Valley.

Q You do not think it is just as important to have transportation as to have gas in the kitchen stove?

A I do not agree that that is an interpretation of what I said. A street car travelling along can have an interruption of a matter of seconds in the power and yet be travelling along but an interruption of a matter of seconds to a pump kicks that pump over and we have got a matter of several pumps and several other motors operating. It means every time this happens you have to start your process up again, you have to balance it out again, that is the difficulty. I might point out Mr. Fenerty, we have Calgary Power in Turner Valley.

Q Yes?

A We are very familiar with the operations and the continuity of supply on the Calgary Power. We have had motors running on it. Therefore we are not talking about what might happen, we are talking about what we know has happened.

Q You will remember that Mr. Hill in making his report has indicated an item of going value of \$200,000.00 and amongst the

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items are the services of highly qualified and experienced men and the equipment and the experience of the Royalite Company and so on, which would be available to the Madison Company and which would be continued; now will you tell me what special equipment, experience, service or anything else which are available to Madison which were not available to the Royalite prior to the transfer, which would insure greater continuity?

A Would you read that question back. I do not think I got the point of it.

Q Yes.

(Reporter Reading) "Q You will remember that Mr. Hill in making his report has indicated an item of going value of \$200,000.00 and amongst the items are the services of highly qualified and experienced men and the equipment and the experience of the Royalite Company and so on, which would be available to the Madison Company and which would be continued; now will you tell me what special equipment, experience, service or anything else which are available to Madison which were not available to the Royalite prior to the transfer, which would insure greater continuity."

A Which ones were available to Madison which were not available to Royalite?

Q Which are now available to Madison - -

A Let me understand, I am trying to get it.

Q My idea, as I understand the evidence, is that Royalite had all those facilities to provide continuity; as compared to Madison it was relatively a powerful Company and that it had an excellent record in providing continuity and I am trying to suggest to you that by effecting a transfer of those assets, you did not insure^a continuity which was not previously available, that is what I am trying to get at.

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been given when discussing Madison reports M-2 and M-2A.

A Well the continuity of the Royalite operations was obtained by the organization in its plants, under a plant foreman, and under a shift foreman.

Q Yes.

A That shift foreman of course, there was one always present in the plant.

Q Yes.

A And he controlled the distribution of steam and power in that yard. Now the operation that he was primarily connected with was the delivery of gas to feed the Canadian Western system.

Q Yes.

A And we are proposing here to perpetuate that system, by having that man in control of the same plant, so that the same performance can be maintained.

Q Yes, I understand all that, but I think we are getting down a side alley a little bit; what I am trying to get at is this, Mr. Stevens-Guille, that you have a situation, - now take this steam power particularly where 70% of it is used by the Royalite Company, now I would suggest to you that the logical situation is for the Madison Company to buy its power, with the element of continuity affecting the rate, where it uses 30%, rather than transferring to the Madison the equipment?

A Well of course that is just contrary to our suggestion and we maintain that our suggestion is based on our operating experience; that the man who is solely dependent upon that power to perform the function that he has to do, should have some co-ordination with the man who has control of that source of power.

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Q Now Mr. Stevens-Guille I am going to ask you to give me your comments based on your theory of what should be done to the position taken by Mr. Kirkpatrick. First of all, will you agree with me that apart from equipment, gas lines, machinery, compression plants and all of these items that the one essential thing which was required in order to enable Madison to provide continuity of gas service was the gas cap?

A It must have available a source of supply of gas continuity as you say, sir.

Q Now Mr. Stevens-Guille will you tell me whether, that is in your opinion, a correct suggestion or not. You go off in all directions from the question but I want you to direct yourself to my question. I suggest to you again that the one thing apart from this experience which is available to both of you and things which can be purchased in the open market or from somebody else in dollars and cents, the equipment, the one thing that is essential to provide any service, - no not any, - a substantial part of the service is the gas cap, am I right?

A Yes.

Q Yes, that is what I want to get at. And did you in furnishing a list of what was necessary to provide continuity of service suggest the transfer of the gas cap leases and resources to the Madison Company?

A Well by making me answer a simple question with one answer you probably got the wrong impression from me.

Q The one thing I am asking you, I am going to be fairly persistent in getting answers to my questions. Did you suggest it, you did or you did not?

A No.

Q You did not?

A No.

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Q Did you consider it?

A It was considered.

Q Did you give consideration to it?

A Certainly.

Q And did you after it was considered, did you put up a fight for it?

A No.

Q You didn't ask for it in any way?

A No.

Q And is your position the same as Mr. Kirkpatrick's, that it would achieve the same results if you could enter into contractual agreements with the owner of the property, is that your position with reference to the gas cap?

A Yes.

Q But your position is entirely different with reference to power requirements and gathering lines?

A Because the situations are different.

Q Will you explain to me why?

A Certainly.

Q You see, what I am getting at, the things that you can buy with money you have to have - -

MR. CHAMBERS: I suggest that he be permitted to answer that question.

Q MR. FENERTY: My understanding is that the things you can go to John Smith and get you have got to have, you have got to have them transferred to you to insure continuity, the things that you can only get from the Royalite Company, the gas cap, you do not have to have to insure continuity. Now is that your position?

A Yes. For this reason - -

Q I would like you to explain it to me.

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- 1989,-

A The sources of supply of gas including the gas cap are many. The connections from those sources to the point at which the gas is required to be able to supply the market are there. There is no reasonable possibility of those sources failing to deliver it at any one and the same time. And there is ample time in the case of failure in one place to make provisions for delivery of gas from another.

Now when you enter into the operation of the plant, the time factor is the important point. Time is exceedingly short to correct any failure in operating conditions. It is essential therefore, that the man on the spot controlling the plant has the power to direct that what he needs he receives. If he needs steam and there is an over-all shortage of steam, he has got to have the power to direct that he gets the first call on that steam right now, not five minutes or ten minutes from now, but right at this very moment, the moment that the trouble shows up. The same applies to power. There is a difference here. You do not have to have ownership of the gas cap, ownership of the crude oil wells delivering the gas, ownership of the other plants supplying crude gas, but you do have to have in our opinion as operators the ownership of those two services.

Q Now then, take your steam plant, we are in agreement are we that the resources of the Royalite are somewhat more extensive than the Madison resources?

A Resources of what?

Q These resources that Mr. Hill has capitalized for \$200,000.00 that Madison had the benefit of, I take it there is a reason for that, isn't there?

A Well I do not understand what your question is.

H-3-4

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Q But perhaps you do not know about this going value in Mr. Hill's report?

A Well I have read that sir and I have listened to the discussion but I do not understand your question on it at the present time.

Q "The Madison Natural Gas Company Limited has now constituted obtains the services of highly qualified and experienced management, which consists of men of many years' experience in the service of Imperial Oil Limited, or its subsidiaries on a part time cost basis," and so on. And next "The Engineers are familiar with the actual general overhead construction costs of natural gas properties which have been built without the strong backing which this property has enjoyed" and that deals with the construction of the plant and so on, and for all of these reasons, talking of the Imperial and Royalite, there is a value attached to this plant of \$200,000.00 in excess of the actual cost. Now I realize that that has to do with construction, it also refers to the engineering service and all of these experiences of Royalite being available to this Company in the future.

A Surely.

Q Now I quite understand everything you have told me but what I want to find out is, what does the Madison Company now possess that the Royalite Company could not provide under a contract providing for continuity of service, that is what I want to find out?

A A contract of continuity of service does not necessarily mean that that is the best way of obtaining the continuity.

Q Now I am not discussing with you what a contract for continuity of service means. I am asking you what Madison now has

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as to facilities to provide in the way of continuity and the supply of power, we will say, that Royalite could not provide under a contract?

A I think the answer to that is definitely this: Madison has the operator in charge of the plant that is dependent upon the continuity of service. Royalite does not employ that man.

Q Mr. Stevens-Guille, I am not going to labour it. I take it that we are all aware that plants requiring complete continuity of service, the Niagara Peninsula and various places throughout Canada, are all supplied by power companies, are they? They are supplied in many instances by power companies?

A You cite an example of what requires continuity of service and I may or may not be able to agree with you.

Q All right. I am sorry to be so long, but I am going to get to a certain point if I can somehow. I have got one direct answer and I am going to try to get another. Is there anything that the Royalite Company using 70% of this power from the boiler could not supply to Madison in connection with its 30% requirements that Madison can supply now, is there anything or was there?

A I have just answered that Mr. Fenerty. It can supply the operator who is in charge of this particular plant that requires continuity of service, and if anybody had been a practical operator he knows that it does not matter how well two parties get on together, there may come times when in all good faith there are divergencies in judgment, and we are therefore saying and continue to say that in our opinion as operators to ensure certain action being taken at the time it is required to be taken, which is immediately, the obvious

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normal and proper method of doing it is to put the man who needs that service in charge of that service, so that he can co-ordinate the whole work.

Q Where do you get him?

A Pardon?

Q Where do you get him?

A The Operator?

Q Yes.

A We furnish him.

Q Who furnishes them?

A Royalite in the first place and we took over from Royalite their experienced operators.

Q Madison got them from Royalite?

A Certainly.

Q And Royalite could have kept them?

A Yes it could have kept them, but Royalite was not in the mood where it was not co-operating when it was establishing a wholly owned subsidiary.

Q And is it essential for Royalite to have an operator who can supply them with 70% of the power when it is required?

A You misunderstood me. The operator I am talking about is the shift foreman.

Q He can say what they need?

A He is also the operator in charge of the scrubbing plant.

Q And he could not tell the Royalite what was needed?

A Certainly not.

Q THE CHAIRMAN: It could be done by contract, couldn't it?

A I do not see how you can by contract.

Q Supposing the Royalite had got the steam plant and the power plant and then entered into an agreement with Madison whereby

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Madison would be entitled to the first call on the power, I mean by a contract, it could have been done that way, couldn't it?

A I do not think it is a practical way of operating. It sounds logical when you are sitting in here but when you are dealing with human beings it does not work that way nearly as well as the method of having the man who is carrying out the operations, he is the man who has the power to give the instructions, I have found that out. I might point out that there was a time in that operation where there was no shift foreman and the plant was struck by lightning. It kicked off the whole of the power service, and it is natural for operators to try and get their own back under control and operating properly as soon as possible. And you get therefore a measure of lack of co-ordination which you do not get if you have one man who has the power to tell every other man that is concerned, and it was at that time and for those reasons that shift foremen were put on at that plant, and since then, though we have had occasions when supplies have been short we have never had any difficulty at all in the operations being carried out in the proper manner, so those are some of the reasons why we base our judgment this way.

Q MR. FENERTY: Mr. Stevens-Guille, was the possibility of these operations becoming public utility operations considered at the time when it was decided what assets would be transferred?

A Oh yes Mr. Fenerty. At that time I think the thought in the Company's mind was the possibility of coming voluntarily under the Utility, not the Natural Gas Utilities, but the Utility Act.

Q And did you give any particular consideration to that

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suggestion when the matter of transfer or not of the gas cap was under consideration?

A Well that was the occasion I referred to just now in answer to your previous question.

Q Let me put it this way, in the matter of the results from a public utility point of view, did that enter into your consideration in determining what would be transferred and what would not be transferred?

A No, the question of what was to be transferred and what was not, that was determined as to what was required from an operating standpoint, and that was my function at that time as it is now.

Q And as far as you are concerned you saw no reason why the Madison Company should acquire any rights in the gas cap?

A No.

Q And the only reason that you suggest that everything else could not properly be taken care of by contract, that is the power requirements and so on, is because one man who was an employee of the Madison Company would know the requirements from day to day?

A It is not a question of knowing the requirements from day to day.

Q Well he would know what?

A He would be in a position, I am repeating what I have already said three or four times.

Q I am a little dense, you see.

A He would be in a position in case of trouble to co-ordinate the operations in such a way that the plants that required priority got that priority.

Q Now is that the reason for the transfer of the gathering lines and the power plant?

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A Yes.

Q That is the reason because of the position that this one man would occupy?

A As far as the gathering lines, it is not the question of one man, it is the question of the organization. It is dependent upon that system of having the control.

Q Having control down to the absorption plant, do you think that is a proper system?

A Certainly.

Q You say you are transferring wet gas from wells to an absorption plant?

A Truly.

Q And you suggest the proper system there is the Madison Company having control of that operation?

A Certainly, for the same reason. If the gasoline plant loses the use of a line it accordingly loses revenue. It is just up to it whether it feels it is sounder to lose revenue for the night or get a crew out. The Madison operation requires continuity of service. It has to ensure it gets that service.

Q And could that be provided in the case of the gathering lines by the Royalite Company by contract?

A Well, again the same things apply. It is a question of whether the person who is dependent upon the service having the control so that it is positive it gets the service it requires and not the service that somebody else thinks it requires.

Q But those reasons have nothing to do with the control of the gas cap?

A Well I have already answered that question once by saying that in my view I do not think so.

Q Yes. You gave us the comparison between the gas cap and the

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power. Now I am asking you whether the reasons you give for the control of the gathering lines are not equally applicable to the control of the gas cap?

A Well, as I have already explained, we do not rely on the gas cap at any one point like we do on these other services, because of all the various places of sources of gas, all of which we are reasonably certain, as far as a human being can be, will not go out at one time.

Q Well then, it does boil down to this, it is the control which two or three or more individuals who are the employees of Madison will find it necessary to exercise from time to time to provide continuity of service for dry gas, is that it? That is the reason for the Madison having all these assets?

A Yes.

Q I see. And you do not think that that can be accomplished by a contract under which the same individuals could indicate their requirements?

A No sir.

Q I see. All right. We will leave it. Could you give me approximately, just a rough outline, of the portion if any of the existing gathering lines and equipment and so forth which were installed as a wet gas operation without reference to the sale of dry gas?

A Well, in no case is there any wet gas collected of which the residue gas is not finally delivered to the market.

Q I am just asking for information, whether or not with the plant and equipment installed which forms part of this system, was there ever any time when the residue gas from it was not being disposed of for fuel or power?

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A You mean the whole of the residue gas was not being disposed of?

Q Well was there any of it, as far as you know, at any time when none of it was being disposed of?

A No sir.

Q To the Canadian Western we will say?

A No sir.

Q From its inception that Canadian Western was not taking from the Royalite?

A No sir, there has always been some gas delivered from this system to the Canadian Western.

Q I see. What were the percentages originally, do you know?

A Percentage of what?

Q Percentage of dry gas as compared to the total produced that was delivered?

A 100% when it was first installed because the first lines were installed solely for the purpose of supplying the Canadian Western.

Q That is what I am trying to find out. All of these gathering systems were not installed for that purpose?

A You asked me when it was first installed.

Q I am trying to make myself clear. You have a gathering system and you have your compressors and all the rest of it, and all I want to find out at the moment is whether or not some part of that plant as it now exists was installed and put in operation when the dry gas down stream from the absorption plant was not being disposed of for fuel in the Canadian Western, that is what I want to know.

A Well I have already stated that at all times a portion of the

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residue gas from this system has been disposed of to the Canadian Western, and at the start 100% of it was, as the first gas gathering lines put in were put in solely for the purpose of supplying the scrubbing plant as the gasoline plant did not exist.

Q The scrubbing plant existed before the gasoline plant?

A That is correct.

Q Are you speaking of the present gasoline plant?

A Yes sir.

Q Did you have an old compression gasoline plant there?

A There was a compression gasoline plant there, but it did not handle gas from the limestone.

Q Did not?

A No.

Q That came up from the upper portion there, the naphtha field?

A That is right. It has all been available for the supply of gas to the Canadian Western since.

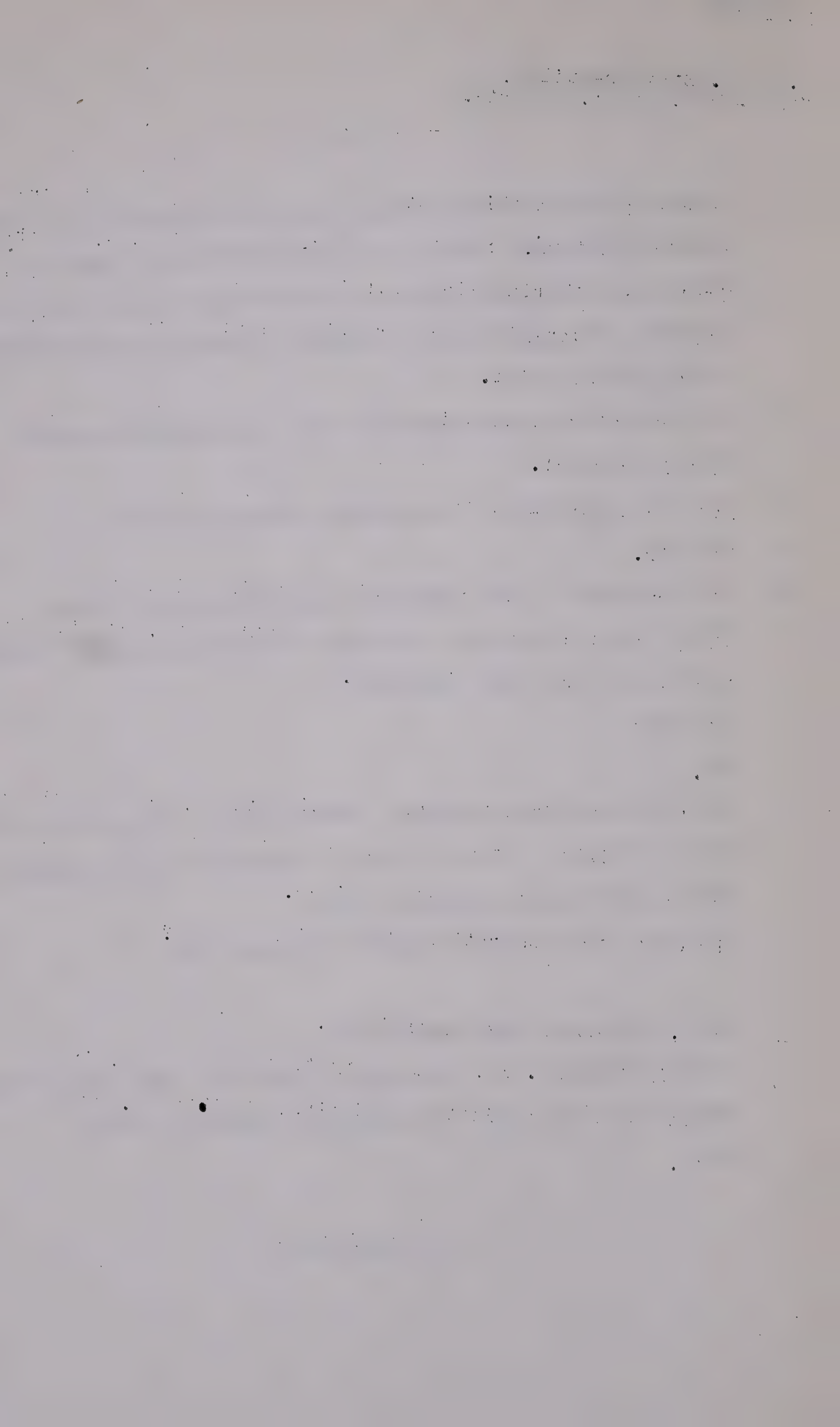
Q Prior to the absorption plant being put in?

A Yes, it has all been available.

Q Now in Item No. 13, I am sorry to take so long, in your report, this one we were just considering, Exhibit No. 77?

A Yes.

(Go to Page 1999)



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Q Estimate No. 24.

A Estimate 24, on what page is that?

Q Page 9, Estimate No. 24. I understood that as a result of the circumstances outlined there you say that it caused some 750 Mcf. per day to be flared from those wells in the early winter.

A Yes, sir.

Q Now why would there be any gas to flare from those wells?

A Because prior to that time the gas from those wells were, as stated here, being used for fuel drilling wells.

Q Yes.

A Then the drilling operations in that area ceased or decreased to an extent that the gas from those wells, Calmont 1A and 2A, is no longer required.

Q What I am getting at is why would it be produced when it was no longer used for fuel.

A Those are crude oil wells.

Q It is produced as a necessary incident of crude oil operation?

A That is correct.

Q It appears then from this that the Calmont Company is one company that proceeded with its crude oil operations without reference to any markets for the gas that was produced as an incident of that, is that true?

A I do not know that I can answer that directly. It may have counted on being able to get it to the market in the way it has actually eventuated.

Q To your knowledge is it true that all the wells in the field, Turner Valley, which have production in excess of daily operating costs proceed with those operations even though there was no way of connecting up their residue gas with the market for it?

A I suppose in general I can say yes. I do not know anything of

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their operating costs though. I cannot say of my own knowledge.

Q Have you ever heard of any case where the sale of the residue gas determined whether or not a crude oil well would operate?

A I would think there may be but I cannot say that I have actually had occasion to come across a case. But then I need not necessarily do that. My operations would not necessarily make me come across it.

Q What you would have in mind would be a marginal well where the oil production was getting so low that it might not otherwise justify having a crew there.

A That is right.

Q Now the item I am trying to find is the item where you refer to the fact that if the Ammonia Plant went down to part-time operation you would require another Compressor. What was that in?

THE CHAIRMAN: That is in Exhibit 74.

MR. McDONALD: Page 13.

THE CHAIRMAN: Item No. 16 I think it is.

A Page 12, item 13 of Exhibit No. 77. That is what you are maybe referring to.

Q MR. FENERY: Yes. Will you tell me whether my understanding is correct that the reason why another Compressor would be required is that the less that is sold for fuel the more must be returned to the formation under these present directions.

A In the summer months, yes.

Q In the summer months?

A Yes. The smaller the market, the greater the excess will be.

Q And during those periods it follows, does it not, that the less gas that is purchased the greater the expense of taking

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care of the residue gas from the gasoline and oil operations.

A The less gas that is purchased.

Q The more you have to put into the formation or flare.

A You mean the less amount that goes to market. As the amount that goes to market diminishes, the amount that goes underground increases.

Q Let us deal with the assumption that everything that is not used economically is going to be repressured.

A Yes.

Q And that it will not be flared.

A Yes.

Q Now with that assumption is it true that if the volume of gas purchased, dry gas, by the consumers in Calgary, Lethbridge, the Ammonia Plant or anybody else in the market for it, if that volume goes down the amount which will either have to be flared or repressured goes up.

A That is correct.

Q And if it is not going to be flared the cost of repressuring goes up as there will be a larger volume.

A That will be dependent on whether the volumes are such that you need additional equipment. If the existing equipment will handle it the cost will not go up very much, in total, and the cost per unit will go down.

Q But there will be additional equipment required if suppose the Ammonia Plant goes off the line.

A That is a possibility, not a certainty.

Q You have provided for it.

A I have provided for it as a possibility.

Q We do not know for certain but it may be so.

A It may be so.

Q And that cost which goes up is not merely the cost per Mcf. but

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it is the cost of handling is it not?

A Well the cost of handling goes down as long as you are handling the same equipment.

Q Yes. All right. Now we will come to what I am getting at in a moment. Let us assume that the cost to the consumer is raised and as a result of that let us assume that commercials other than the Ammonia Plant go off the line. Then you have another increased volume of gas which must be repressured and possible further costs with further possible Compressor Plants and that in turn is going to increase the moneys that somebody pays out.

A That is correct.

Q And if that is paid out by the ultimate consumer it is going to increase the cost of gas to him.

A That is correct.

Q And let us assume that that in turn results in a further reduction in the amount of dry gas consumed you then have a further possible expense in compressing.

A That is correct.

Q And you ultimately reach a point, the economic point, that you do not have people using gas for fuel except somebody who is prepared to pay for any kind of luxury.

A I imagine that might well be.

Q Then you are going to have a great deal of dry gas that has got to be compressed. Have you any suggestion to make as to where the cost of that would come from?

A No, I am afraid I have not any suggestion. My suggestion would be that it would be more likely to be solved by an adjustment of the prices on the way.

Q You will agree with me the reason you have got that problem is because somebody has insisted on producing wet gas, haven't you?

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A The problem of disposing of the excess.

Q If it had not been produced you would not have had that problem of repressuring it.

A No if it was not produced it would not be there to repressure.

Q And I am right in saying somebody has insisted on producing wet gas although there is no market for the residue dry gas and that is the reason you have got that problem is it not?

A Yes.

THE CHAIRMAN: Is that altogether right, Mr. Fenerty?
Does not the crude oil problem come in there as well?

MR. FENERTY: That is my contention and I am merely arguing here as a method of driving it home.

A I assumed him to mean he was insisting on producing it. He did not say his reasons for insisting. They may be good or bad. But he is still insisting on producing it because he wants to lift his oil. That is why I agreed with him.

Q Well I am asking you opinions perhaps and I should not be asking you opinions. But that has been the practice here I believe. You would not suggest that, we will say, a few thousand citizens of Calgary should pay for the cost of repressuring if they were not using the gas would you? Perhaps you would sooner not express an opinion.

A Well I think that is going outside my range.

Q Perhaps that is a matter of economics. I will leave that anyhow.

THE CHAIRMAN: Mr. Fenerty, what would you say if all those producers in Turner Valley decided to shut down their wells and you could not get gasoline to run your car? What would you say then?

MR. FENERTY: I would complain, but I would not complain to the man who burned gas in his furnace.

MR. CHAMBERS: I was wondering what the City would

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say if they closed all the wells down and had no gas.

MR. FENERTY: What I am saying is that is not the responsibility of the man who burns the residue product in his furnace.

Q Mr. Stevens-Guille, as an engineer, I want you to assume for a moment that instead of Turner Valley being a wet gas field it was a dry gas field.

A Yes sir.

Q And you were coming here now to make arrangements for the supply of that dry gas to the City of Calgary, we will say, for the purpose of it being burned in furnaces and commercially and so forth.

A Yes, sir.

Q Your set-up of gathering lines, I suggest, would not correspond very closely to the present set-up leading to the various absorption plants would it?

A Assuming that the same wells were producing dry gas as are producing wet gas today?

Q Yes. You see it is going to gather the dry gas from a dry gas field and transport it to Calgary. I do not mean your absorption plants, I am speaking of your gathering lines.

A Yes.

Q You would not have either the number of feet of gathering lines or their present locations would you?

A Well I do not know of any reason offhand to change any of them.

Q I am putting that in the form of a question.

A I tried to make fairly clear yesterday, as we went over the gas gathering map rather closely, the lines covered the area in a complete and not a duplicate manner.

Q What I am getting at is, and you will tell me whether I am right, that in some of the plans I have seen, it appears to me

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that gathering lines go North past the Gas & Oil Products' plant towards the Royalite Compression Plant and some G.O.P. gathering lines run South past some Royalite gathering lines going North, am I right?

A There is a little overlap just in that section there that I think you are looking at. As a matter of actual fact, Compressor Station No. 3 would not have the capacity to handle that gas were it to be routed North.

Q But not very much.

A Well it is fully loaded at the present time.

Q Apart from the absorption industry your lines would go more or less direct would they not in the shortest possible direction?

A We always endeavour to lay them the shortest feasible route.

Q Now they necessarily have to be laid to come to your Absorption Plant first.

A But the Absorption Plant is at a central point and it would not alter appreciably the over-all length of these lines if you were to lift it and put it somewhere else.

Q You have gas gathering lines running from North of the Plant as well as South of the Absorption Plant haven't you?

A True enough.

Q You would not have any of them running down to the place where the Absorption Plant is and then back towards Calgary if it were not a wet gas operation, would you? That is what I am trying to get at.

A Well at what point are you assuming the take off to the Calgary system would be in this supposed field of yours?

THE CHAIRMAN: There is a large pipeline map over on the other wall that perhaps you could use.

MR. FENERTY: I did not intend to get into this too much because I have not gone into it from an engineering

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point of view.

MR. CHAMBERS: Mr. Fenerty, I do not want to interject but I do suggest in fairness to the witness and maybe to yourself that when you are putting this hypothetical question to him about a dry gas field, you should distinguish as to whether you are talking about a gas field without a sulphur content.

MR. FENERTY: I was coming to that. I was interested in something you said about the possibility of operating through the scrubbing plant and producing fuel gas without first processing through the Absorption Plant. You did say that was possible didn't you?

A As an emergency operation for a limited length of time.

Q It would be only for a limited time?

A Yes. It has been done. That is not a supposition I am telling you about. It is an actual fact.

Q As I understand you, it is not a thing that you would do

A Definitely not. You cannot operate for more than a matter of a few hours that way.

Q Now then let us assume this, that you have a field that is a dry gas field in the sense that you have not got the moisture which I understand is removed largely in the Separators and that you have not got wet gas in it and that you have got gas which needs to be scrubbed, just using a layman's word for it.

A Yes.

Q I am suggesting to you that you would not, under those circumstances, have any gathering lines running in a Southerly direction from the wells.

A Well I cannot see why not. You have to bring them to a central point to scrub the gas just as much as you have at the present time.

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Q Would you think, as an engineering matter of costs, it would be better to bring the gas to be scrubbed to a central point rather than in the North end of the field?

A You are suggesting that the location of the Scrubbing Plant would be more advantageous if it was at the North end of the field?

Q Yes.

A Then you have got to have a larger pipeline size from the South end to bring your gas the increased distance.

Q That may be the answer.

A I doubt offhand whether you would save much in length of pipe or size of pipe.

Q I am just trying to find out from you. Do you think the way this thing would be handled if it was a dry gas operation would be that you would locate your Scrubbing Plant somewhere in the centre of the field and bring all the wells North of that down by gathering lines to that Scrubbing Plant and back towards Calgary?

A Yes, I think offhand you would do that because you are up against the question of what you are going to do with compressor capacity as your operating pressure falls. And the normal way is to take it and radiate from the compressor plant.

Q That might work out as well or even better than I suggest, direct lines from the wells going North with your Scrubbing Plant in the North end.

A In this particular case, as I understand, we are considering that the same wells would be operating as are operating today but that they will be producing dry instead of wet gas.

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Q And would you say that in the main, with this gathering system which you would instal, that the gas would have to be scrubbed?

A Considering the same operating processes at the wells as it is today, yes.

Q Now I do not know whether I should mention it now, I think I will not mention it here, something which has to do with the report which was filed and Mr. Stevens-Guille has nothing to do with that, that is all, thank you.

THE CHAIRMAN: Mr. Steer?

MR. STEER: Subject to the Board's approval, I would like to allow the arrangement which my learned friend Mr. Milner made to stand until we return.

THE CHAIRMAN: Very well, Mr. Harvie?

MR. HARVIE: No questions.

THE CHAIRMAN: Mr. Macdonald?

CROSS-EXAMINATION BY MR. MACDONALD

Q Mr. Stevens-Guille, if you will refer to page 12 of Exhibit 77, there is a compressor mentioned in item No.13 and then a further compressor mentioned in item 16, those compressors have another function besides repressuring, do they not?

A Yes, those compressors were on the wet gas service in the winter and the returned gas service in the summer.

Q And the only extra cost to place them in the repressuring service is the installation of minor changes, or changing them over in construction?

A Changing them down from a low, relatively low pressure cylinder to a high pressure cylinder and a certain expense in in connecting the high pressure cylinder to the high pressure head-up.

Q And the compressors are necessary for producing the gas

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required in winter time in the general scheme of conservation in the field?

A That is right. Their service in the first place would be on the wet gas to the Royalite in the winter time and then in the summer when the loadfactor on the plant drops, due to the drop in market demands, what would otherwise be idle compressor capacity, it will be used to repressure or return gas to the formation.

Q And referring to this compressor in item 16 on page 13, I think that was the compressor referred to as being installed because of the possible change in operation?

A Well the two compressors actually mentioned in item 16 on page 13 are additions which we will assume, which we have assumed will be necessary in 1946 and 1948 for boosting the wet gas.

Q It will make more gas available for the market?

A Yes. They will take care of the fact that the field pressure by 1946 and 1948 would have continued to decline and therefore more horsepower will be required in order to bring it up to the pressures sufficient to deliver it to the market.

Q Now Mr. Stevens-Guille, I may have missed it but I have not seen any reference in either your statement or Mr. Kirkpatrick's statement with regard to the north field return fuel line?

A No, there is no reference to it because it does not belong to Madison. It belongs to Royalite.

Q So that it is not in Mr. Hill's valuation?

A No, it is not in Mr. Hill's valuation.

Q The only reference I have seen to it is in the proposed contract between Madison and the producers?

A Yes, that is right.

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THE CHAIRMAN: Perhaps you might follow that up Mr. McDonald, by finding out why that return fuel line was left as an asset of Royalite instead of being transferred to Madison.

Q MR. McDONALD: I will. Will you be good enough to answer that question suggested by the Chairman?

A The reason is that it was installed for the purpose of increasing the production of isobutane which is extracted from the wet gas at the gasoline plant and therefore does not enter into Madison's operation as the supplier of gas for the market at all as the residue gas is returned from that quantity of wet gas ^{through} / this return fuel line to the lease from which that gas came for the purpose of use as drilling fuel.

Q DR. BOOMER: Do you sell the gas?

A Madison, no Sir, it is accounted for on a return gas basis, that is to say the equivalent volume is delivered to the producer at his nomination. Then if there is any excess that goes to the market through that producer.

Q MR. McDONALD: As I understand it, Mr. Stevens-Guille, it refers to the sharing position?

A It enters into that and it is accounted for in the system which we are proposing for that purpose.

Q Now does the Royalite Company sell gas through that line to producers in the north end, for operations in the north end?

A There may be one or more at the present time. I cannot say that without checking it and I have had no occasion to check it. You see so far as Madison is concerned the system is that the producer, whether it is Royalite or anybody else, advises us at what point he wants that gas back and we have charge of the meter at that point so we know the volumes which are

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returned to each point as well as a master meter on the line at the point it leaves the plant, so that we are in complete control of the accounting. I can advise myself on that but I am not in a position to answer it at the moment.

Q THE CHAIRMAN: Do these people pay a transportation charge for the gas which is returned to them through that line?

A A transportation charge.

Q If you send the gas back from the absorption plant to the producer who originally delivered the wet gas to you?

A To Royalite.

MR. CHAMBERS: You are talking about the return fuel line.

THE CHAIRMAN: The return fuel line.

A A transportation charge on the wet gas?

Q No, on the return fuel.

A That is a Royalite line and we do not have any charge.

Q Quite true but do you happen to know if there is any charge?

A Well I do not think so.

Q Really it is a public utility within a public utility, is it?

A Well it is an arrangement primarily to increase the iso-butane to meet the need of iso-butane for war purposes. The line was built primarily for that purpose.

MR. CHAMBERS: My present information is that there is no charge and I think it is mentioned in one of the contracts which was filed?

Q MR. McDONALD: Mr. Stevens-Guille, will you tell me.....

MR. CHAMBERS: Mr. McDonald, if you will pardon me just a moment, if I may interrupt until I give the Chairman that reference, it is on page 14 of Madison report M-16 in the present Inquiry.

Q MR. McDONALD: Will you explain to me, Mr. Stevens-Guille, the water system that is owned or operated by the Madison

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Company?

A Well the only water system that is owned and operated by Madison is its circulating water system for its own use. It does not supply water to any body else. It pumps its own water up for its own cooling operations. It also has a water system in the Home area which supplies its gas gathering heaters in that area, as there is no other source of supply and it has a water line from the Gas and Oil Products Plant to certain gas gathering heater installations in that area and for that purpose it purchases its water service from the Gas and Oil Products people.

Q You do not supply water to the absorption plants?

A No Sir.

Q Or to the Royalite facilities?

A No Sir.

Q Or to the Town of Turner Valley or Black Diamond?

A No Sir. Royalite has all its own water pumping facilities.

Q Now can you explain to me the heater system, what I am interested in, is what is a flow meter?

A You want me to describe the parts that enter into a flow meter.

Q No, I notice in one of the items in Exhibit 74, flow meters are to be purchased and installed that cost \$853.94?

A Where are you reading from.

Q Exhibit 74, page 2, schedule A, that is M-7?

A Item number.

Q Item number 5?

A "Purchase and install 20 flow meters".

Q Yes?

A Those have been installed in some cases at batteries or wells delivering into the gas gathering system. Some of those have been installed on points in the plant, on fuel or residue gas^{lines}/

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as I have described in my report under "unit operations".

Royalite estimated and did not measure either the residue gas or the fuel. I cannot tell you but I can get you the exact location of all those.

Q What I am interested in, are these recording meters?

A Those are ordinary Foxboro recording gas flow meters.

Q And they have a recording chart which changes every day?

A Let me check that so that I am sure.

MR. CHAMBERS: I am instructed that the amount is right but that there is a typographical error in the number of meters.

THE WITNESS: That is why I was checking it because I did not think it was the right number. I think there is an error in the number of flow meters. Twenty were originally to be purchased I think is the explanation and as I understand we did not have the labour available to instal them and we did not therefore complete that purchase and if my memory is right, only six out of the twenty were purchased, which would mean that that amount is correct.

Q I think they are valued by Mr. Hill somewhere in the neighborhood of one hundred and seventy some dollars?

A That of course is correct and is the actual purchase price in Calgary.

Q Well now prior to the organization of the Madison Company, what kind of meter was installed at the Royalite well?

A A similar meter to the one we have just been discussing, a Foxboro or a Westcott flow meter.

Q And now you are installing additional meters which will be looking after Madison fuel at each of those spots?

A That is correct and also because this meter will be solely on the point of entry into the gas gathering lines, whereas at the present time there are connections to the flare line with the

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well meters on the Royalite extensions. You see the charts which we used before, when it was solely a Royalite operation, were the charts that everybody has on their wells to meter the total amount of production.

Q Yes. Now by having those meters installed at the entry to the gas gathering system you will only be purchasing and paying for the actual amount of gas received?

A It is there so that we establish that everything that goes through that meter enters the system, because when it was a single operation that was not necessary.

Q Where as the producer, if he has his meter at the separator, he not only meters what he delivers to you but anything else that he might run through his flare line or to any other place?

A That is correct.

Q So that the two will not exactly coincide?

A No, they do not definitely on certain kinds of operations.

Q Now can you give me this information, Mr. Stevens-Guille, the absorption plant was erected in 1932?

A 1933 it went into operation.

Q Now prior to that time there was not^{the} wet gas, - the natural gasoline processed, - it was not removed from the gas that was scrubbed?

A That is correct because there was insufficient gasoline content in the gas to justify the operation of the gasoline plant.

Q Now is it correct to say that the G.P.M. content was so low it did not require to be scrubbed, it did not require to scrub the gas at that plant?

A To absorb the gas. The "G.P.M.", that is merely a contraction meaning "gallons per thousand".

Q And have you in mind any relative figures, I mean gallons per

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thousand of the gas prior to 1933?

A Well Royalite 4, when I first came to the field in 1928 and 1929, had a gasoline content of, - so low that it was very hard to determine it, something like 4/100's of a gallon and the other wells around there had gasoline contents of the same general order and as the conditions changed, pressures decreased, the content gradually rose to the comparatively low figure that it is today.

Q And is there a prospect of the G.P.M. content lowering again to a point where this gas will not have to be absorbed and treated in the absorption plant?

A Oh no, I do not think there is any chance of that. There is a chance that it will increase.

MR. McDONALD: Thank you.

THE CHAIRMAN: Then we will adjourn now until Monday May 7th at 9.30 and the cross-examination of Mr. Stevens-Guille will go on at that time.

MR. FENERTY: If the Board pleases, before you formally adjourn, I mentioned there was some information which we would like to get, which arises out of the balance sheet and the profit and loss account and I have just been discussing it with Mr. Chambers. I think we can deal with it between us rather than attempt to analyse it now. We can decide whether we will have it, I will furnish the details to Mr. Chambers and then it can be discussed again.

However, as Mr. Morrison points out, if we are going to get it it could be prepared during the interval of the adjournment but Mr. Chambers has not had an opportunity of considering whether he is prepared to give us these items.

MR. CHAMBERS: If you will give me a copy of what you

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want, some of it I think we have already given to you.

MR. FENERTY: Perhaps that is the best way. I will
send it over to Mr. Chambers.

(The Inquiry was here adjourned to be resumed at 9.30 a.m.
on Monday May 7th, 1945)

